EP

United Nations Environment Programme

UNEP(DEPI)/MED WG.320/Inf.19
30 July 2007

ENGLISH

**MEDITERRANEAN ACTION PLAN**

Meeting of MAP Focal Points

Madrid (Spain), 16-19 October 2007

# ANNOTATED FORMAT FOR THE PRESENTATION REPORTS FOR THE AREAS PROPOSED FOR INCLUSION IN THE SPAMI LIST

## MPA "TAVOLARA-PUNTA CODA CAVALLO"

UNEP/MAP
Athens, 200

AREA MARINA PROTETTA TAVOLARA PUNTA CODA CAVALLO

Direzione Protezione della Natura

CoNISMa Consorzio Nazionale Interuniversitario per le Scienze del Mare

# ANNOTATED FORMAT FOR THE PRESENTATION REPORTS FOR THE AREAS PROPOSED FOR INCLUSION IN THE SPAMI LIST

# MPA “TAVOLARA-PUNTA CODA CAVALLO”

Index:



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# 1. AREA IDENTIFICATION

**1.1 COUNTRY/COUNTRIES** (in the case of transboundary areas)

Italy

**1.2 ADMINISTRATIVE PROVINCE OR REGION**

Region: Sardinia
Province: Olbia - Tempio Pausania

**1.3 NAME OF THE AREA**

Tavolara–Punta Coda Cavallo Marine Protected Area

**1.4 GEOGRAPHIC LOCATION**

Describe its geographical boundaries, e.g. rivers, roads, geographical or administrative boundaries (do not describe the co-ordinates here; please make a separate annex with a map and a description of geographical co-ordinates as stated in the legal declaration of the area).

Tavolara–Punta Coda Cavallo Marine Protected Area is located in the North - Western cost of the Sardinia, in the South of Olbia Gulf, facing the Tyrrhenian Sea.

The MPA boundaries are delimitated by Ceraso Cape, in the North, and Finocchio Creek, in the South including the Islands present in this zone (i.e. Tavolara, Molara and Molarotto Rossa and Piana).

The local governments of Olbia, Lori (Porto S. Paolo) and S. Teodoro combine in Tavolara MPA.

**1.5 SURFACE OF THE AREA** (total)

15.091 ha

**1.6. LENGTH OF THE MAIN COAST** (Km)

~ 80 km (76.094 m)

## 2. EXECUTIVE SUMMARY (maximum 3 pages)

Tavolara MPA surface extends for 15.091 ha and includes 80 km of littoral coast.
The rectangular shape of Tavolara Island is strictly related to its geomorphologic development and to the constant action of the atmospheric agents.
The South part of the Island, named "Spalmatore di Terra", is characterised by an almost level rocky line that divides two different sides.
The Eastern side presents several pebbles inlets delimitated by granitic rocks. Instead the Western side forms a large sandy gulf that ends at the base of an high limestone cliff rich in conglomerates.
During the low tide a sandy bar emerges from the extreme south point of "Spalmatore di Terra" leading the Island to a big granitic clod from which depart the shallow sea bottoms reaching the Gallura coast.
The North – Western part of Tavolara Island, named "Spalmatore di Fuori", facing the open sea, is characterised by an hill whose base resembles a widen cone (Timone Point). This part is linked to the rest of the Island by an isthmus, few meters large, delimiting two inlets: Ponente's Creek (West side) and Levante's Creek (Est side).
Pink granular pegmatite constitutes the granitic basement of Tavolara Island. Pegmatite outcrops in correspondence of the North - South extremities of the Island and it constitutes the concave base on which the Mesozoic calcareous-dolomite stone lies.
The Island is surrounded by active cliffs incised in limestone and dolomites. Platforms of basal abrasion are also present and these are characterised by littoral karstification.
In the North – Eastern sector of the Island, more exposed to the wind and sea action, the frame of caves and littoral arches are interested by of backing processes.
The submerged bottoms are characterised by isolated relieves, such as the Pope's bank showing a pinnacle like shape. These relieves are interrupted by quartzes-feldspathic sandy covers and Triassic levelling surface, originated during the Jurassic marine transgression, constitutes the base of the carbonate succession of the Island.
In the southern part of the Island, at the depth of 50 – 60 meters, a discontinuity surface divides the granite rock from the carbonate one.
Differently Molara Island is characterised by a completely granitic rock composition directly connected to the granite basement of Tavolara Island and the Sardinia. Furthermore the granitic sea bottoms of Molara are marked by residuals paleoforms, such as *inselberg*, *thor*.
Molarotto, the little Island, emerges in the Olbia Gulf far from Tavolara and Molara It is 50 meters high and almost completely granitic, carachterised by a scarse vegetation.
Shallow submerged abrasion platforms, presenting several fractural canals, are located between Molarotto and Molara.
The coast between Ceraso Cape and S. Teodoro is rich in inlets and emerging rocks.
In the MPA are also present terrestrial habitat of primary importance for environmental conservation, such as San Teodoro.
The Islands and the coast, geomorphologically strongly different among them, favours the presence of different marine and terrestrial habitats.
In the territories of Tavolara MPA are present psammophillous and halophyte littoral areas (such as calcareous cliff with *Seseli bocconei*) associated to the garrigue and the thermoxerophile communities of siliceous and calcareous environment.
The terrestrial landscape is also characterised by *phryga* of *Centaurea horrida*, endemic of the Tavolara mountain and of Juniper matorral, such as *Juniperus phonicea*, tipical of Molara.

About 30 endemic plants species are present in Tavolara Island, some of these have their *locus classicus* in this Island, such as *Asplenuim petrarche*, others have an important phytogeographic value.
The Islands of Tavolara-Punta Coda Cavallo MPA are important Mediterranean breeding sites for migratory birds, such as for example Yelkouan Shearwater (*Puffinus yelkouan*) Cory's Shearwater (*Calonectris diomedea*), Shag (*Phalacrocorax aristotelis*), Audouin's Gull (*Larus adouinii*), Little Heron (*Egretta garzetta*).
Regarding the marine environment, the upper mediolittoral rock of Molara and Molarotto are characterised by the presence of belts colonized mainly by *Patella ferruginea* and *Lithophyllum byssoides*. The distribution of this last encrusting coralline algae is specially developed in the South – Western side of Tavolara, because of the presence of calcareous cliffs, and in the North – Western side of Molara, because of the wider exposition to the wave action (ENEA 1990).
In Tavolara Island, in the limestone sector, two perforator bivalves *Lithophaga lithophaga* and *Pholas dactylus* are commonly such as the Vermetid *Dendropoma petraeum* (Schiaparelli *et al.* 2003).
The wide Cloroficee algae phytocoenosis of the upper infralittoral rock, including *Caulerpa prolifera* and *Penicillus capitatus*, associated to sciophilous species, such as *Halimeda tuna* and *Flabellia spp.* probably developed after a regression process of the *Posidonia oceanica* meadow (Solazzi *et al*. 1984).
The mobile benthos has been studied during different periodic sampling activities focusing mainly on marine and saltish sandy interstial Crustacea species. Among these, particular attention has been focused on Copepods belonging to the Cylindropsyllidae, a Family adapted to the marine interstitial environments. Further the finding of a new *Ingolfiella* (Anfipoda, Crustacea) species has been recorded (Ruffo & Vigna Taglianti 1989).
At Tavolara Island a well structured *Posidonia oceanica* meadow extends in the lower infralittoral, up to the depth of about 30 meters, resulting discontinuous in the internal part of the inlets or in the submerged abrasion platform (ENEA 1990).
In the infralittoral and circalittoral rocky bottoms it is common to find various nudibranch species, such as *Cuthona ocellata* and *Cerberilla bernadettae*, the last one can be considered a relict species (Cattaneo *et al.* 1992), together with numerous colonies of *Eunicella singularis*, *Eunicella cavolinii* and *Paramuricea clavata* and, rarely, colonies of *Paramuricea macrospina* and *Gerardia savaglia* (Pais *et al.* 1992).
The fish fauna is characterised by an important biodiversity at the Species level specially in proximity of *Posidonia oceanica* meadow during the night and the winter. The more common Families belong to Pomacentrids, Scorpenids, Labrids and Sparids (Pais *et al.* 1999).
In Tavolara MPA is commonly present *Epinephelus marginatus* with individuals of different size (Pais *et al.* 1999).
The visual census performed on the fish fauna has allowed to estimate the densities and the size / frequency of same *target* species of the recreational and professional fishery (i.e. *Epinephelus marginatus*, *Sciaena umbra*, *Diplodus sargus*).

The results indicated marked differences among zone A *vs* B, C zones and the area outside the MPA. In fact, higher densities and individual of larger size have been recorded in the zone A despite the other sites. Further, *S. umbra*, in some sites outside the MPA, is not present.
In Tavolara MPA is marked the presence of *Tursiops truncatus*, *Grampus griseus* and *Balenoptera physalus* even if in lower densities than others sectors of the North Sardinia.

Cattaneo-Vietti R., Chemello R., Trainito E., 1992. An account on the Opisthobranchs of North Eastern Sardinia with a record of *Cerberilla bernadettae* Tardy, 1965 (Nudibranchia; Aeolidiina). *Lavori S.I.M.* 24: 61-68

Cottarelli V., Venanzetti F., 1989. Ricerche zoologiche della nave oceanografica "Minerva" (C.N.R.) sulle isole circumsarde. II. Cylindropsyllidae del meiobenthos di Montecristo e delle isole circumsarde (Crustacea, Copepoda, Harpacticoida). *Ann. Mus. Civ. St. Nat. "G. Doria"*, Genova, 87: 183-235

Pais A., Chessa L. A., Serra S., Mura F., Ligios L., 1999. Ittiofauna di una prateria di *Posidonia oceanica* nella Riserva Marina di Tavolara- Capo Coda Cavallo (Sardegna nord- orientale). *Biol. Mar. Medit.* 6(1): 591-594

Pais A., Trainito E., Romor M., Conti P., 1992. Sulla presenza di *Gerardia savaglia* (Bertoloni, 1819) nelle acque dell'Isola di Tavolara (Sardegna nord-orientale). *Oebalia* 17: 377-378

Ruffo S., Vigna Taglianti A., 1989. Ricerche zoologiche della nave oceanografica "Minerva" (C.N.R.) sulle isole circumsarde. III. Description of a new cavernicolous Ingolfiella species from Sardinia, with remarks on the systematics of the genus (Crustacea, Amphipoda, Ingolfiellidae). *Ann. Mus. Civ. St. Nat. "G. Doria"*, Genova

Schiaparelli S., Guidetti P., Cattaneo-Vietti R., 2003. Can mineralogical features affect the distribution patterns of sessile gastropods? The Vermetidae case in the Mediterranean Sea. *J. Mar. Biol. Ass.* U.K. 83: 1267-1268

Solazzi A., Tolomio C., Marzocchi M., 1984. Segnalazione di una fitocenosi bentonica lungo le coste Nord-Orientali della Sardegna. *Atti Mem. Acc. Patavina Sci.*, Lett. ed Arti, XCVI (II):31-36

## 3. SITE DESCRIPTION

### 3.1 TYPOLOGY OF THE SITE

| | | |
|---|---|---|
| 3.1.1. Terrestrial surface, excluding wetlands (ha): | | 400 ha |
| 3.1.2. Wetland surface (ha): | | 190 ha |
| 3.1.3. Marine surface (Sq. Km): | Marine internal waters | 4.5 ha |
| | Territorial sea | 1.500 ha |
| | High sea | Not applicable to the proposed area |

### 3.2 MAIN PHYSICAL FEATURES

3.2.1. Geology/Geomorphology

Give a brief description of: (i) geological aspects (lithologic and tectonics); (ii) processes of sedimentation and erosion observable in the area; (iii) coastal geomorphology and (iv) island system. Indicate bibliographical sources.

Tavolara MPA territory, widely diversified, is characterised by the presence of pink granite, connected to the plutonian granitic of the Gallura, sandy littoral quartzes - felsphatic and calcareous – dolomitic relieves, concentrated in Tavolara Island. The limestone of Tavolara rests on a granitic basement, made of pink granular pegmatite, characterised by a surface completely levelled by the atmospheric agents about 225 M years ago.

The coast of the MPA is characterised the alternation of small, isolated inlets and long falcate beaches among high promontories. Along the coast dunes and hind - dunes are also present. Here the actives riverbeds, of the Padrongiano, Lutturai, San Teodoro rivers, together with the sea connection channel create salt - marshes and littoral lagoons.

This environment characterise Ceraso Cape beach, the salt marsh of Istana, Ponto of the Taverna and Brandinchi Creek, the sandy beach and the lagoon of Porto San Paolo, the sandy beach of Cinta and the lagoon of San Teodoro.

Along the coast granitic cliffs, such as Ceraso Cape, Molara Point, Coda Cavallo Point Also, break these landscape.

Molara Island and the small Islands present the typical granitic morphology relieves: isolated block of different irregular shape exposed to erosion phenomenon.

The submerged geomorphologic environment of Tavolara MPA

Tavolara MPA marine and terrestrial environmental are among the most diversified of the Sardinian Region. The landscape is important as the natural environment and similarly needs to be protected

*Geomorphology of the continental platform*

The continental platform extends for about 10 miles; the convexity of its hedge, usually not marked, is site of spread sediment, except in correspondence of two canyon heads: Molara in the North and Posada in the South.

In the external platform the Holocene sedimentation is scarce allowing the outcrop of shore lines, such as *beach rock*, developing for several kilometers at different depth, up to –120 m.

The internal coastal platform shows characters strictly related to the structure of the emerged sector.

*The submerged cliff*

Tavolara Island is surrounded by active cliff incised in the limestone and dolomite. In the Southern part of the Island the cliffs are more than 200 meters high while, in the North part, they are moderately high and steep. In the Northern and Eastern side the cliff is partially buried by wide detrital table of *eboulis ordonnès tardo-wurmiane*.

The Southern submerged cliff is instead reach the depth of 25 meter extending up to 5 km.

The basement of the submerged cliff is usually covered by sub - angular collapsed stone blocks over ten meters high.

*The granitic bottoms*

Active abrasion platforms, incised in granite rock, edge regularly the coast. The continuity of the rocky outcrops is interrupted in the submerged beach by sandy quartos – feldsphatic covers designing modest inlets.

*The beach-rock*

Fossil littoral bar cemented in *facies* of *beach-rock* are present in the marine bottoms of the Spurlatta Gulf. Four order of *beach-rock* can be recognised at different depths ( –40, –25, –5 e –0,5 meters). The deeper fossil beach result to be most complete, in fact, the others present a series of orthogonal fracture. Evidence of the undermining processes are detectable in the bends proxy to coast.

*Sediments*

Quartzes – feldsphatic sand characterises the submerged beaches among the coast and the frame of the rocky platform.

In the submerged beaches have been found ripple or megaripple structure modelled by the drift.

In the Porto Taverna Bay and Cinta of S. Teodoro littoral bar are organised in two symmetric order oriented to South.

Under the lower limit of the *Posidonia oceanica* meadow (– 30; – 40 meters) are present bioclastic sediment level. In proximity to this limit the organogenic component is mainly composed by bryozoa, foraminifers and other organisms of carbonate skeleton coming from the meadow.

*Evolution*

In the submerged beaches active erosion processes are detachable because of the scarce presence of sediments, such processes are linkable to the human impact (tourist harbour, anchoring, draw fish). The alteration caused by the human activities influence also the distribution of *Posidonia oceanica* meadows, with detrimental effects on the deeper sedimentation dynamics.

3.2.2. Other interesting physical features: Such as hydrodynamics, volcanic formations, caves, underwater formations, etc.

Tavolara – Punta Coda Cavallo MPA is located in the Eastern sector of the central-Northern Tyrrhenian Sea. This MPA shares with the Tyrrhenian Sea the typical stratification of the water column, characterised by Atlantic water (MAW – *Modified Atlantic Water*) in the surface, Levantine water (LIW – *Levantine Intermediate Water*) in the middle and Thyrrenian water in the depth (TDW – *Tyrrhenian Deep Water*). It has been hypothesised that this stratification can originate in proximity of the North – Western coast of Sardinia.
In the Northern and central part of the basin the circulation is organised in cyclonic and anticyclonic structures. The MPA is located in proximity of the most important structure of the basin, that the Eastern winds canalise in the Bonifacio' Strait. This structure consists of a cyclonic vortex (NTC – *North Tyrrhenian Cyclone*), its form and disposition vary according to the variability of the water flux direct to North.
During the winter season, when the thermal gradient between the Ligurian Sea and the Tyrrhenian Sea grows, the direct flux to North increase pushing the vortex to drawn in to the Bonifacio' Strait, resulting to be oriented to South and confined in the Eastern part of the Thyrrenian Sea.
During the summer the NTC is confined to the North of the Strait presenting internal vortexes and smaller structures.
An anticyclone vortex of about 100 km is presents in the South, less stable that the previous one but able to influence the waters dynamics of Tavolara MPA.
The information regarding the water movements inside the MPA are scarce, the actual knowledge are related to the Northern part of the MPA.
Outside the MPA the water stream presents a S – SE direction interrupted by Tavolara Island so to originate an anticyclonic circulation. In case of Western winds this anticycolnic vortex laps the trait between Timone Point and Aranci Gulf, while in case of Easter winds it laps the area between Ceraso Cape and Timone Point.
The stream speed is strongly influenced by the depth of the marine bottoms, in the surface the maximum value recorded is of 25 cm/s.

3.2.3. Length of beaches (in Km), including islands:

| | |
|---|---|
| a) Length of sandy beaches: | 11.531 km |
| b) Length of pebble or stony beaches: | 0.314 km |
| c) Length, height and depth of active sand-dunes: | |

## 3.3 FRESHWATER INPUTS

3.3.1. Mean annual precipitation (in mm)

Data regarding the annual precipitation of the area are recorded by SAR (Agro-meteorological Sardinian Service) and by the Airport Service of Olbia and such data are available paying.

Data regarding the precipitation recorded by the thermo-pluvial-metric stations of the Hydrographic Statal Service, dislocated on Monte Mario littoral hill 15 m high (Lat. N 40° 55', Long. W 002° 57'), are available for the periods 1921-70 and 1977-86.

The climate of the Northern part of Sardinia is affected by its geographical position, exposition to the wind of the IV quarter and to the air mass coming form Africa.

Hence the precipitations in this area are related to the cyclonic rains, determined by the central – Western Europe baric pressures and they are irregularly distributed during the seasons.

3.3.2. Main water courses (permanent and seasonal)

The rivers Padrongiano, Lutturai, San Teodoro create salt marshes and littoral lagoons nearby the MPA boundaries.
A little seasonal source is present in Molara Island.

3.3.3. Estuarine areas: Existence and brief description

An estuarine area is present in correspondence of the San Teodoro salt marsh. The sandy bar forming the dunes, limiting the salt marsh, is characterised by sandy shores, with scarce or pioneer vegetation (Cakiletea) and by dunes with fragmented associations of *Agropyron* and *Ammophilion*.

The most peculiar aspect are the vascular vegetation of the salt marsh water (*Ruppia* spp.), the halophytic vegetation dominated by Chenopodiacee and the *Juncus* spp. dune communities (*Juncus acutus* and *Juncus maritimus*)

The San Teodoro salt marsh will be embodied in the MPA boundaries in a short time.

3.3.4 Freshwater springs: Existence and brief description, including marine offsprings

Not applicable to the proposed area

**3.4 BIOLOGICAL FEATURES** (B2, Annex I)

3.4.1. Habitats: A brief description of dominant marine and terrestrial habitats, on the basis of the habitat classifications adopted within the framework of MAP (and their coverage in ha)

I. 2. 1 Biocenosis of supralittoral sands
I. 2. 1. 5. Facies of phanerogams which have been washed ashore (upper part)
II. 1. 1. 1. Association with halophytes
II. 3. 1. 1. Facies of banks of dead leaves of *P. oceanica* and other phanerogams
II. 4. 1. 3. Association with *Nemalion helminthoides* and *Rissoella verruculosa*
II. 4. 2. 1. Association with *Lithophyllum byssoides* (= entablature with *L. tortuosum*)
II. 4.2.10. Pools and lagoons sometimes associated with vermetids (infralittoral enclave)
II. 4. 3. 1. Association with *Phymatolithon lenormandii* and *Hildenbrandia rubra*
III. 2. 3. 3. Facies with *Loripes lacteus, Tapes* spp.
III. 3. 2. Biocenosis of coarse sands and fine gravels under the influence of bottom currents (also found in the Circalittoral)
III. 3. 2. 1. Maërl facies (= Association with *Lithothamnion corallioides* and *Phymatolithon calcareum*) (can also be found as facies of the biocenosis of coastal detritic).
III. 3. 2. 2. Association with rhodolithes
III. 5. 1. *Posidonia oceanica* meadows (= Association with *Posidonia oceanica*)
III. 5. 1. 1. Ecomorphosis of striped meadows
III. 5. 1. 2. Ecomorphosis of “barrier-reef” meadows
III. 6. 1. 2. Association with *Cystoseira amentacea (* var. *amentacea*, var. *stricta*, var. *spicata)*
III. 6. 1. 3. Facies with Vermetids
III. 6. 1. 14. Facies with *Cladocora caespitosa*
III. 6. 1. 15. Association with *Cystoseira brachycarpa*
III. 6. 1. 16. Association with *Cystoseira crinita*
III. 6. 1. 20. Association with *Sargassum vulgare*
III. 6. 1. 25. Association with *Cystoseira compressa*
IV. 2. 2. 10. Facies with large Bryozoa
IV. 3. 1. Coralligenous biocenosis
IV. 3. 1. 1. Association with *Cystoseira zosteroides*
IV. 3. 1. 5. Association with *Sargassum* spp. (indigenous)
IV. 3. 1. 10. Facies with *Eunicella cavolinii*
IV. 3. 1. 11. Facies with *Eunicella singularis*
IV. 3. 1. 13. Facies with *Paramuricea clavata*
IV.3. 2. Semi-dark caves (also in enclave in upper stages)

| | | | |
|---|---|---|---|
| Marine Plants & Algae | | | |
| *Posidonia oceanica* | C | T | R |
| *Nanozostera noltii* | C | E | R |
| *Cystoseira amentacea var. stricta* | C | E | R |
| *Cystoseira zosteroides* | C | E | R |
| *Lithophyllum byssoides* | C | E | R |
| Marine Invertebrates | | | |
| *Aplysina sp. plur.* | C | E | R |
| *Axinella polypoides* | C | E | R |
| *Ircinia fetida (Sarcotragus spinosulus)* | C | E | R |
| *Ircinia(Sarcotragus) pipetta* | C | E | R |
| *Tethya sp. plur.* | C | E | R |
| *Gerardia savaglia* | C | R | R |
| *Asterina pancerii* | C | E | R |
| *Centrostephanus longispinus* | C | E | R |
| *Ophiodiaster ophidianus* | C | E | R |
| *Dendropoma petraeum* | C | E | R |
| *Lithophaga lithophaga* | U | T | R |
| *Luria lurida (= Cypraea lurida)* | C | T | R |
| *Mitra zonata* | C | E | R |
| *Patella ferruginea* | U | T | R |
| *Pholas dactylus* | C | E | R |
| *Pinna nobilis* | C | T | R |
| Fish | | | |
| *Cetorhinus maximus* | C | T | |
| *Hippocampus guttulatus* | U | T | R |
| *Hippocampus hippocampus* | U | T | R |
| *Mobula mobular* | C | T | R |
| Amphibians and Reptiles | | | |
| *Caretta caretta* | C | T | M |
| *Eretmochelys imbricata* | U | T | M |
| Birds | C | T | M |
| *Calonectris diomedea* | C | T | M |
| *Larus audouinii* | U | T | M |
| *Hydrobates pelagicus* | C | T | M |
| *Phalacrocorax aristotelis* | C | T | M |
| *Phalacrocorax pygmeus* | C | T | M |
| *Phoenicopterus ruber* | C | T | M |
| *Puffinus puffinus yelkouan (P. yelkouan)* | C | T | R |
| *Sterna albifrons* | C | T | M |
| *Sterna sandvicensis* | O | T | M |
| *Pandion haliaetus* | | | |
| Mammals | U | T | M |
| *Balaenoptera physalus* | U | T | M |
| *Delphinus delphis* | O | T | M |
| *Physeter catodon* | O | T | M |
| *Stenella coeruleoalba* | O | T | R |

| | | | |
|---|---|---|---|
| *Tursiops truncatus*<br>*Monachus monachus* | O | T | |

**3.4.3. Flora: Describe in a few sentences the main plant assemblages significant in the area.**

The marine biocenosis of the lower mediolittoral rock present in Tavolara MPA are characterised by *Lithophyllum byssoides* bends, a coralline algae recognised also as "trottoir", associated with *Patella ferruginea*, the *Posidonia oceanica* meadows and the paleo -beaches or *beach rocks*.
The hard bottom to the depht of 40 meters are the most attractive for the SCUBA diving turists, an eco – sostenibile activity of high importance for the MPA. This bottoms are populated by photophilic communities developed according a light gradient. Brown, red and green algae create the base for the development of high biodiversity.
The terrestrial dominant habitats are the hind - dunes, the beaches, and the granite and carbonate cliffs.
The Tavolara MPA vegetation, similar to those of the limestone mountain of the Western Sardinia, is composed by 463 entities, belonging to 71 Families, 34 of these are endemic species. The naturalistic importance of these Island is mainly due to their florist peculiar vegetation.
Among the 34 endemic plants 7 create a particular biotope of high scientific interest. Tavolara is the *locus classicus*, that is the locality in which the plant has been described for the first time, this first sample, conserved in a herbarium, became the *typus* (the plant of reference).
The plant that have their *locus classicus* in Tavolara are:

| | |
|---|---|
| *Alyssum tavolara* | Endemic species of Tavolara, it leaves on the limestone mountains of Oliena and Orgosolo, in the central part of Sardinia |
| *Limonium hermaeum* | Strictly calcicolous plant |
| *Asperula deficiens* | Endemic plant of Tavolara. This plant is very rare: it leaves only on the North Sardinia cliffs |
| *Cephalaria mediterranea* | Present on the calcarous cliff of Tavolara and of the central Western Sardinia |
| *Campanula forsythii* | Mountain plant. This plant is endemic central Western Sardinia and Tavolara limestone |
| *Buphtalmum inuloides* | Plant recorded for the first time on the cliff of Tavolara and then found also in Budelli Island, Testa Cape, Mortorio and Molara Island |
| *Centaurea filiformis* | This plant is endemic of the limestone of the central Western Sardinia form Figari Cape to Tavolara and M. Arbu of Seui. This plant is a rock plant usually located in area of not strong illumination, it is able to tolerate different high from the sea level reaching 1200 meters. |
| *Centaurea horrida* | Sardinian endemic plant distributed only in the Nurra (North – Western Sardinia) and in the Asinara and Tavolara Islands. This plant is the only protected form the Habitat Directive (92/43/CEE). Tavolara Island is the only site in which the *Centaurea filiformis* distribution touch the one of *Centaurea horrida*. |

**3.4.4. Fauna: Describe in a few sentences, which are the main fauna populations present in the area.**

*Marine fauna*

The taxomic data obtained from the feasibility study (1990)on the MPA reveal that the area is mainly interested by a typical nephritic environment.

In Molara and Molarotto Islands, in the mesolittoral, *Patella ferruginea* is well distributed, while *Lithophaga lithophaga* and *Pholas dactylus* are particularly present in the North and East part of Tavolara in correspondence of the limestone formation. In contrast *Dendropoma petraeum* is more abundant on the granite rocks, confirming the important role of the bio-mineralogy in influencing the distribution of the marine benthos.

It is also well represented, among the benthos fauna, the big Mediterranean bivalve *Pinna nobilis*, protected according to the Habitat Directive (92/43 CEE; IV)

The Mollusca distribution, in particular that of the Opistobranch, reflects the Thyrrenian distribution, resembling that found for the Liguria Sea and the Naples Gulf. To remark is the presence of two Eolidi not common in the Mediterranean Sea: *Cuthona ocellata* and *Cerberilla bernadettae*.

Modest colonies of *Gerardia savaglia* are present in La Mandria point, in the circalittoral.

Regarding the fish fauna young *Epinephelus marginatus* individuals are common in the infralittoral while bigger individuals are mainly present in the circalittoral.

The bottoms of Pope's point (Tavolara) and Arresto Point (Molara) are rich in Gorgonians such as: *Paramuricea clavata*, *Eunicella cavolinii*, *Eunicella singularis* and *Eunicella verrucosa*.

In the submerged cliffs it is common to find different fishes such as moray (*Muraena helena*), conger (*Conger conger*) and several groupers (*Epinephelus marginatus*). During the spring season it is also possible to see *Seriola dumerili* and *Lichia glauca*, lipping to the coast, in particular to Molarotto, to hunt smaller coastal fishes.

Among the species protected by the Habitat Directive (92/43 CEE) it is possibile to find in Tavolara MPA *Centrostephanus longispinus* (the only species, among the Mediterranean sea urchin, belonging to the Family of Diadematids), *Scyllarides latus*, *Lithophaga lithophaga*

*Birds*

Some of the most common birds present in Tavolara MPA:

| | |
|---|---|
| *Phalacrocorax aristotelis* | The most representative bird of the area |
| *Puffinus yelkouan* | Tavolara is the representative breeding site of this species, for this reason the MPA has been included among the area of international importance in the 1986 "Alghero Declaration" |
| *Larus audounii* | Molara Island represents an important breeding site of this species |

In the cliffs it is also possible to find Peregrine (*Falco peregrinus*), Kestrel (*Falco tinnunculus* ), Raven (*Corvus corax* ) and the the Ospery (*Pandion haliaetus* ), an occasional host of the coastal salt marsh.

The S. Teodoro salt marsh offers an ideal environment for the bird fauna, and among the most reprehensive species there is Greater Flamingo (*Phoenicopterus ruber* ).

## 3.5. HUMAN POPULATION AND USE OF NATURAL RESOURCES

### 3.5.1 Human population

a) Inhabitants inside the area:

| | Number | Date of data |
|---|---|---|
| Permanent | 20.000 | |
| Seasonal number (additional to permanent) | 100.000 | 2006 |

Description of the population

Prof. Nicolini, University of Pisa, is working on the human population characterisation

Main human settlements and their populations

The main human settlements are Olbia and Loiri – Porto San Paolo.
For their populations see above.

### 3.5.2 Current human use and development

a) Briefly describe the current use of the area by subsistence, artisan, commercial and recreational fishing, hunting, tourism, agriculture and other economic sectors.

The area is interested by a season tourism, mainly composed by families and young people, less frequent a tourism linked to congresses. This flow of people supports the commercial activities, in particular that linked to Hotels. Hence restoration and location are the main employment sectors together with business activities and rearing while agriculture is not developed.

Regarding the diving activities 11 diving centre are in the MPA while 15 are outside the MPA but dive inside the MPA. There are about 16 diving spots, 8 are the more visited, for a total of 9429 SCUBA dives per year.

Only a small amount of the population is employed in the professional fishing, about 10 fisherman in the MPA territories. The recreative fish, instead, counts about 2000 fisherman per year.

b) Enter how many of the users depend on these resources, seasonality, and assessment of the social and economic importance of their use and of the perceived impact on the conservation of the area, in a score of 0-1-2-3 (meaning null, low, medium, high).

| ACTIVITY AND CATEGORY | ASSESS IMPORTANCE OF Socio-economic | Conserv. Impact | Estimated No. of Users | Seasonality |
|---|---|---|---|---|
| FISHING | | | | |
| Subsistence | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | |
| Commercial, local | **1** | **2** | **10** | **NO** |
| Commercial, non-local | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | |
| Controlled recreational | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | |
| Un-controlled recreational | **3** | **3** | **2.000** | **YES** |
| Other | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | |
| TOURISM | | | | |
| Regulated | **3** | **3** | **100.000** | **YES** |
| Unregulated | 0 1 2 | 0 1 2 | 0 1 2 | |
| Indicate the type of tourism | 3 | 3 | 3 | |
| FAMILIARE -..... | 0 1 2 | 0 1 2 | 0 1 2 | |
| GIOVANILE | 3 | 3 | 3 | |
| CONGRESSUALE -..... | **2** | **3** | 0 1 2 | |
| . | **3** | **3** | 3 | |
| . | **1** | **1** | 0 1 2 | |
| Tourism facilities | 0 1 2 | 0 1 2 | 3 | |
| | 3 | 3 | 0 1 2 | |
| | 0 1 2 | 0 1 2 | 3 | |
| | 3 | 3 | 0 1 2 | |
| | **3** | **3** | 3 | |
| | | | 0 1 2 | |
| | | | 3 | |
| | | | 0 1 2 | |
| | | | 3 | |
| FOREST PRODUCTS | | | | |
| Subsistence | 0 1 2 3 | 0 1 2 3 | | |
| Non-timber commercial, local | 0 1 2 3 | 0 1 2 3 | | |
| Non-timber commercial, non-local | 0 1 2 3 | 0 1 2 3 | | |
| Timber commercial, local | 0 1 2 3 | 0 1 2 3 | | |
| Timber commercial, non-local | 0 1 2 3 | 0 1 2 3 | | |
| Agriculture | 0 1 2 3 | 0 1 2 3 | | |
| Stockbreeding | **1** | 0 | | |
| Aquaculture | **2** | **1** | 6 | |
| EXTENSIVE STOCK GRAZING | | | | |
| Subsistence | **1** | **1** | | |
| Commercial, local | 0 1 2 3 | 0 1 2 3 | | |
| Commercial, non-local | 0 1 2 3 | 0 1 2 3 | | |
| OTHER ACTIVITIES | | | | |
| Edilizia | **3** | **3** | | |

3.5.3. Traditional economic or subsistence uses

Name any environmentally sound traditional activities integrated with nature, which support the well being of the local population. E.g. land, water use, target species, if closed seasons or closed zones are used as management techniques.

The Olbia Gulf is characterised by a traditional mussel farmer, while in the S. Teodoro salt marsh is present a Mugilids farmer. Both the activities are typical of the Region and part of the economical reality.

## 4 MEDITERRANEAN IMPORTANCE OF THE SITE

This Section aims at stressing the importance of the site for conservation at the regional or global scales, as set in Art. 8 para. 2 of the Protocol and B2-a, B2-b and B2-c in Annex I.

### 4.1 PRESENCE OF ECOSYSTEMS/HABITATS SPECIFIC TO THE MEDITERRANEAN REGION

Name the type of habitats considered of Mediterranean specificity, on the basis of the habitat classifications adopted within the framework of MAP, and their estimated cover (Ha).

II. 3. 1. 1. Facies of banks of dead leaves of *P. oceanica* and other phanerogams
II. 4. 1. 3. Association with *Nemalion helminthoides* and *Rissoella Verruculosa*
II. 4. 2. 1. Association with *Lithophyllum byssoide*
II. 4.2.10. Pools and lagoons sometimes associated with vermetids (infralittoral enclave)
II. 4. 3. 1. Association with *Phymatolithon lenormandii* and *Hildenbrandia rubra*
III. 2. 3. 3. Facies with *Loripes lacteus*, *Tapes* spp.
III. 3. 2. 1. Maërl facies (= Association with *Lithothamnion corallioides* and *Phymatolithon calcareum*) (can also be found as facies of the biocenosis of coastal detritic).
III. 3. 2. 2. Association with rhodolithes
III. 5. 1. Posidonia oceanica meadows (= Association with *Posidonia oceanica*)
III. 5. 1. 1. Ecomorphosis of striped meadows
III. 5. 1. 2. Ecomorphosis of “barrier-reef” meadows
III. 6. 1. 2. Association with *Cystoseira amentacea (* var. *amentacea*, var. *stricta*, var. *spicata)*
III. 6. 1. 14. Facies with *Cladocora caespitosa*
III. 6. 1. 15. Association with *Cystoseira brachycarpa*
III. 6. 1. 16. Association with *Cystoseira crinita*
III. 6. 1. 20. Association with *Sargassum vulgare*
III. 6. 1. 25. Association with *Cystoseira compressa*
IV. 2. 2. 10. Facies with large Bryozoa
IV.3.1. Biocenosi del coralligeno
IV. 3. 1. Coralligenous biocenosis
IV. 3. 1. 1. Association with *Cystoseira zosteroides*
IV. 3. 1. 5. Association with *Sargassum* spp. (indigenous)
IV. 3. 1. 10. Facies with *Eunicella cavolinii*
IV. 3. 1. 11. Facies with *Eunicella singularis*
IV. 3. 1. 13. Facies with *Paramuricea clavata*

## 4.1PRESENCE OF HABITATS THAT ARE CRITICAL TO ENDANGERED, THREATENED OR ENDEMIC SPECIES

A critical habitat is an area essential to the conservation of the species concerned. These species should be those included in Annex II of the Protocol. E.g. Islets and sea stacks, as small islands in the sea or in large bodies of water, mostly important for water-bird colonies; caves appropriate for monk seals; undisturbed sand beaches where marine turtle nesting occurs; coastal lagoons where threatened fish or bird species feed or breed; tidal flats, coastal or benthic substrates important for marine invertebrates, etc.

Name the habitat types and the species linked to it.

Marine habitats:
III. 5. 1. *Posidonia oceanica* meadows (= Association with *Posidonia oceanica*): *Posidonia oceanica*

Terrestrial habitats
Biocenosis of supralittoral sands: dunes
Sandy beaches: *Phalacrocorax aristotelis desmarestii*, *Puffinus puffinus yelkouan* and *Larus audouinii*

## 4.3 OTHER RELEVANT FEATURES (Art. 8 paragraph 2 in the Protocol)

### 4.3.1. Educational Interest (B-3 in Annex I)

E.g. particular values for activities of environmental education or awareness

The MPA collaborates with the Institute of Marine Civilities (I.CI.MAR.) of S. Teodoro.
In the Sea Museum, inside the Institute, it is possible to visit the archaeological founds and the historical steps of the Gallura civility.
Further the MPA collaborates also with the Centre for the Recovery of Marine Mammals (CRiMM).
The main objective of the centre is to update the information about marine mammals present in the MPA, to awaken the public, to start activities of environmental information and to help the MPA in the recovery of the mammals.
In the Centre has been also created an Info Point to distribute information about the MPA and its rules.
Further a new Centre, Sea Turtles and Cetaceans First Rescue Centre, sponsored by the MPA, has been open to allow the recovery and the protection of the sea turtles and marine mammals from the threatened caused by fishery and boat navigation.
All these projects are part of the main objective of the MPA Management Body, that is the protection of biodiversity and the conservation of the marine environment.
For these reasons the MPA has decided to promote its participation to the Count Down 2010. This is a project, in which take part also the World's Governments, and its objective is to obtain in the 2010 a reduction in the loss of the global biodiversity and a reduction of the global poverty.

### 4.3.2. Scientific Interest (B-3 in Annex I)

Explain if the site represents a particular value for research in the field of natural or heritage sciences.

In Tavolara MPA there are different aspects of scientific interest. First of all the particular geology, mainly of Tavolara. The rocky composition and disposition has favoured the development of several endemic plants species of Mediterranean interest.
Regarding the marine environment several *beach rocks* formation are present at different depth in the MPA. Other important scientific site are the lagoon, the salt marshes and the dunes.
Further Tavolara MPA is object of several studies focused on evaluate the human impact inside and outside the protected area, such as the impact of the fishery on the fish fauna.

### 4.3.3. Aesthetic Interest (B-3 in Annex I)

Name and briefly describe any outstanding natural features, landscapes or seascapes.

The principal aesthetic aspect is linked to the particular conformation of the granitic cliffs of the MPA and to suggestive shape of Tavolara.
Also appreciable are the dune and its typical vegetation.
While regarding the marine environment the Pope's bank is one of the most appreciate diving point in the Mediterranean Sea for its high biodiversity, colours (such as the bicolour sea fans) and fish fauna.

### 4.3.4. Main cultural features

Indicate if the area has a high representative value with respect to the cultural heritage, due to the existence of environmentally sound traditional activities integrated with nature which support the well-being of local populations.

In Molara are present the rests of the medieval village of Gurgurai.
In the same Island in 235 d.C.the Imperator Massimo Trace exiled the Pope Ponziano and the anti Pope Ippolito, the ruin of Church's Creek are the historical heritage of this event.

Tavolara is considered a site of industrial archaeology because of the presence of lime furnaces of the 1800.

Every year during the month of July Tavolara is the set of the "Italian Cinema Festival of Tavolara", an important Italian cinematographic event.

# 5. IMPACTS AND ACTIVITIES AFFECTING THE AREA

## 5.1. IMPACTS AND ACTIVITIES WITHIN THE SITE

### 5.1.1. Exploitation of natural resources

Assess if the current rates of exploitation of natural resources within the area (sand, water and mineral exploitation, wood gathering, fishing, grazing...) are deemed unsustainable in quality or quantity, and try to quantify these threats, e.g. the percentage of the area under threat, or any known increase in extraction rates.

The main exploitation activity of natural resources is represented by the fishery. In the Tavolara MPA operate a fishery fleet composed of 22 boats with 31 fisherman.
In the MPA are used very selective tools, such as trammel net (86,4%).
The fisherman that operate in the area have declared to perceived the protection effect exercised by the MPA on the fish fauna, in fact, 96% of them fish inside the MPA, in the respect of the MPA rules.

### 5.1.2. Threats to habitats and species

Mention any serious threats to marine or coastal habitats (e.g. modification, desiccation, disturbance, pollution) or to species (e.g. disturbance, poaching, introduced alien species...) within the area.

The high human pressure during the summer and the related production of solid waste are the higher threatened to the environment of the Island. Hence, nowadays the MPA Management Body is focusing its effort in reducing and better organizing the management of the wastes.

Further threatens for the MPA are represented by the building of new structure to host the summer tourism but specially by the detrimental abusive building industry in San Teodoro and in Porto San Paolo. Such unregulated activities can modify the natural environment causing a loss in biodiversity.

The marine fauna results to be primary threatened during the summer because of the traffic of yachts. For example several studies have demonstrated how the noise generated by the navigation, over the limits suggested by the MPA rules, can affect the natural behaviour of Cetaceans.

In 2003, after the discovery of *Caulerpa taxifolia* at “Spalmatore di Terra” (Tavolara), a monitoring program of this invasive species has been started. Hence this algae has been manually removed according to the French scientific community principles. In fact, these principles suggest immediate solutions whether *Caulerpa taxifolia* is present near important naturalistic area.

5.1.3. Demand by an increased population and infrastructures

Assess whether the current human presence or an expected increase in frequentation (tourism, passage of vehicles and boats) and any human immigration into the area, or plans to build infrastructures, are considered a threat.

The constant grow, during the years, of the summer population has caused an enlargement of the building industry pressure that could affect some natural particular habitats (see also 5.1.2.)

5.1.4. Historic and current conflicts

Make a brief statement of any historic or current conflicts between users or user groups.

No remarkable conflicts are present inside the MPA. While an historical completion due to the fishing activities is present between the municipal districts of the MPA and Aranci Gulf fishery fleet.

## 5.2. IMPACTS AND ACTIVITIES AROUND THE SITE

In Art.7.2-e the Protocol calls for the regulation of activities compatible with the objectives for which a SPA was declared, such as those likely to harm or disturb species or ecosystems (Art.6.h), while Section B4 in Annex I asks to consider “the existence of threats likely to impair the ecological, biological, aesthetic or cultural value of the area” (B4-a in Annex I), recommending the existence, in the area and its surroundings, of opportunities for sustainable development (B4-d) and of an integrated coastal management plan (B4-e).

5.2.1. Pollution

Name any point and non-point sources of external pollution in nearby areas, including solid waste, and especially those affecting waters up-current.

There are some problems related to the management of human solids wastes during the summer season in the Islands even if a system of collection, named “spazza-mare”, is present.

Further the hygienic service on the Islands are not adequate to the human pressure.

5.2.2. Other external threats, natural and/or anthropogenic

Briefly describe any other external threat to the ecological, biological, aesthetic or cultural values of the area (such as unregulated exploitation of natural resources, serious threats on habitats or species, increase of human presence, significant impacts on landscapes and cultural values, pollution problems, any sectorial development plans and proposed projects, etc.), likely to influence the area in question.

During the summer season in the salt marshes, nearby the MPA, there can be natural problems due to eutrophication that can cause problems of smell and irritation to the human population.

5.2.3. Sustainable development measures

Comment whether the area is covered by an integrated coastal management plan, or bordering upon a zone under such a plan. Are there other opportunities for sustainable development provided for in the neighbouring areas?

The objective of the Management Plan is to reach a sustainable use of the coast.
The program has identified the vulnerable points of the MPA and has designed the strategies of management to limit the impacts.
The model has been studied to be applied also to the area nearby the MPA.

## 6. EXPECTED DEVELOPMENT AND TRENDS[60]

The foreseeable development and trends of the site do not appear in the list of common criteria for the choice of protected marine and coastal areas that could be included in the SPAMI list, as established in the Protocol and its Annex I. Moreover, this is not always easy to assess and it is necessary to have knowledge about the site, which is not always available to all managers of protected areas; Thus, it is not obligatory to fill in the boxes in this Section 6.

On the other hand, the assessment of this foreseeable evolution and trends constitutes a dynamic supplement to the static knowledge of the site, as it appears in Sections 3, 4 and 5 above. Moreover, it is of significant importance for the definition of the objectives and the management plan of the site.

It thus appears desirable to bringing out the main outlines at least in respect to the following points:

### 6.1. EXPECTED DEVELOPMENT AND TRENDS OF THREATS TO AND PRESSURES UPON THE AREA

Deal briefly in succession with:

- The demographic development in and around the site
- The development of economic activities (other than tourism and recreation) within the area
- The development of local demand on tourism and recreation
- The development of tourism pressure on the area

It is expected an increasing trend of the seasonal tourism.

The policy of the MPA Management Body is to enhance a sustainable tourism in the respect of the environment.

The general financial balance of the municipal districts in the MPA is growing in these last years.

### 6.2. POTENTIAL CONFLICTS IN THE AREA

Make a brief statement of potential use conflicts between the users or group of users of the site.

Among the different productive sectors are present some conflicts due to the scarce capability of the stakeholders to organise cooperation to distribute the different economic opportunities.

[60] By expected development and trends are meant the development, which is thought most likely to occur in the absence of any deliberate intervention to protect and manage the site.

**6.3. EXPECTED DEVELOPMENT AND TRENDS OF THE NATURAL LAND ENVIRONMENT AND LANDSCAPES OF THE AREA:** as expected arising from the evolution of the pressures

The expected development is focused on the application of the sustainable use of the natural resources.
Hence a sustainable system is linked to a reduction of the building industry activity, to an enhancement of the services and of the surveillance during the summer season.
In this contest the MPA Management Body operate to redistribute the tourism flow along the year promoting Eco – Tourism programs.

**6.4. EXPECTED DEVELOPMENT AND TRENDS OF THE MARINE ENVIRONMENT AND SEASCAPES OF THE AREA:** as expected arising from the evolution of the pressures

Applying the M.P. guide lines it is suited the development of a sustainable marine tourism. Such policy aims to reduce the human seasonal impact

The fishing and diving activities and their impact on the environment are monitored by the MPA Management Body.

# 7. PROTECTION REGIME

**7.1 LEGAL STATUS** (General Principles "e" and Section C-2 both in Annex I)

7.1.1. Historical background of the protection of the site

| |
|---|
| Identified as possible marine protected area in 1982 (Law no 979); Instituted as MPA in 1997 (D.M. 12.12.1997) (G.U. n. 47 del 26.02.1998); (modified in 2001 D.M. 28.11.2001) (G.U. del 19.02.2002) |

7.1.2. Legal texts currently ruling the protection on the site
Enter the national conservation category, the dates and the present enforcement status of the legal instrument declaring the protection of the area. Consider both the land and the marine areas of the site. Include the full text(s) as an annex.

| |
|---|
| Harbour office Ordinance n° 34/2005<br>Annex to the format |

7.1.3. Objectives (General Principles "a" and D-1 in Annex I)
Name in order of importance the objectives of the area as stated in its legal declaration.

| |
|---|
| The MPA policy is focused on the protection of the marine and coastal environments, together with the promotion of scientific research, educative and cultural activities and a sustainable tourism.<br>Hence the main objective of the Management Body is to conserve and preserve the natural environment also considering the economics trends of the area.<br>The MPA represents an opportunity for creating a tourism focused on the environment, historic, architecture and gastronomic. |

7.1.4. Indicate whether the national protection regime arises from international treaties enforced or from implementation measures of treaties (Art. 6.a in the Protocol).

| |
|---|
| Not applicable to the proposed area |

## 7.2 INTERNATIONAL STATUS

7.2.1. Transboundary or high seas areas

Complete this section only if the area is transboundary, totally or partially in the high sea, or within areas where the limits of national sovereignty or jurisdiction have not yet been defined. In this case, mention the modalities of the consultation (Art. 9 para. 3A in the Protocol and General Principles "d" in Annex I).

| |
|---|
| The Tavolara-Punta Coda Cavallo is not a transboundary area |

7.2.2. International category

Mention if the area, or part of it, has been designated and on what date, with an international conservation category (e.g. Specially Protected Area, Biosphere Reserve, Ramsar Site, World Heritage Site, European Diploma, Natura 2000, Emerald network, etc.).

| |
|---|
| Not applicable to the proposed area |

## 7.3 PREVIOUS LEGAL BACKGROUND AND LAND TENURE ISSUES

Briefly mention if the area or part of it is subject to any legal claim, or to any file open in that connection within the framework of an international body. Describe the land tenure regimes within the area, and append a map if existing.

| |
|---|
| Not applicable to the proposed area |

## 7.4 LEGAL PROVISIONS FOR MANAGEMENT (Section D-1 in Annex I)

7.4.1. Zoning

Briefly state if the legal text protecting the area provides for different zones to allocate different management objectives of the area (e.g. core and scientific zones in both land and sea, fishing zones, visitation, gathering, restoration zones etc) and in this case the surface area in ha of these zones. Include a map as an annex

The delimitation of the MPA Tavolara as well as its division into the areas A, B and C are established by the Decree issued by the Department of the Environment (D.M. 12.12.1997), enclosing cartography (G.U. n. 47 del 26.02.1998);

Yellow buoys delimit the different zones.

Tavolara MPA is divided in three zones, according to the different protection regime:

A zone (no entry-no take zone) includes two site one in Tavolara and the other one in Molarotto Island. In Tavolara Island the boundaries of the no take zone are: the Southern point of Levante's Creek, the Pope's Point, the South-Est side of Passo Malo Point. Molarotto Island no take zone corresponds to the pentagonal area around the Island.

B zone, general reserve and zone C partial reserve.

For further information relative to the extension and the coordinate points of the zone see the MPA attached map and Ordinance no 34/2005

7.4.2. Basic regulations

Mention the provisions, which apply to the area concerning the implementation of Article 6 of the Protocol (paragraphs a to i), Section D5 (a to d) in the Annex I and Article 17 of the Protocol.

Zone A: no take zone. In the no take zone are allowed the scientific research activities and SCUBA diving (along fixed way) asking previously the permission to the Management Body.

Zone B: general reserve. In this area are allowed sailing up to the limit of 10 kns, regulated SCUBA diving activities, bathing and mooring, those only in special structure created by the Management Body. Not destructive selective fishing is allowed to the fisherman that live in the municipal boundaries of the MPA, the fish total amount is decided from the MPA Management. Trawl-net and not professional fish are not admitted.

Zone C: partial reserve. In this area are allowed sailing, regulated mooring, SCUBA diving, not destructive selective fishing to the fisherman that live in the municipal boundaries of the MPA and recreational fishing line.

7.4.3. Legal competencies

Section D4 in Annex I states that the competence and responsibility with regard to administration and implementation of conservation measures for areas proposed for inclusion in the SPAMI List must be clearly defined in the texts governing each area. Additionally Art.7.4. of the Protocol calls for the provision of clear competencies and co-ordination between national land and sea authorities, with a view to ensuring the appropriate administration and management of the protected area as a whole. Mention in which way do the legal provisions clearly establish the institutional competencies and responsibilities for the administration and conservation of the area, and if being the case, their co-ordination means, including those between land and sea authorities.

The MPA Istitutive Decree constitutes the juridical tool of the management. It is applied to the sea area of the MPA and the terrestrial boundaries are marked by the State demesne competencies.
For a correct management of the MPA it is necessary a cooperation among the Management Body and local administration. To this aim the Management Body of Tavolara MPA has realised a Management Plan.

7.4.4. Other legal provisions

Describe any other relevant legal provisions, such as those requiring a management plan, the establishment of a local participation body, binding measures for other institutions or economic sectors present in the area, allocation of financial resources and tools, or any other significant measures concerning the protection and management of the area or its surrounding zones.

The Management Plan develops the MPA policy and includes the terrestrial management for the costal area afferents the MPA.
The Management tools are addressed to the local administrations and the Sardinia Region Government whether their are not of competence of the Environmental Ministry.
The Management Plan foresees activities in cooperation with the local economy, such as the local business activities, and with the voluntary associations.

# 8. MANAGEMENT

Through the General Principles, para. (e) in the Annex I, the Parties agree that the sites included in the SPAMI List are intended to have a value as examples and models for the protection of the natural heritage of the region. To this end, the Parties ensure that sites included in the List are provided with adequate legal status, protection measures and management methods and means.

## 8.1. INSTITUTIONAL LEVEL

8.1.1. Authority/Authorities responsible for the area

The Ministry Decree (D.M.12.12.1997, successively modified in with the D.M. 28.11.2001) recognises a Consortium of three littoral local administrations, i.e. Olbia, Loiri –S. Paolo and S. Teodoro, as Management Body. The Consortium is active since 1.1.2004.

8.1.2. Other participants in the management body
Such as other national or local institutions, as stated in Section D6 in Annex I.

The reserve commission is nominated by DEC/DPN no 606 (20.04.2004) and collaborates with the Management Body bringing proposes and suggestions
In particular the commission collaborates in the preparation of the Management Plan and it is active part in the MPA organisation, including the financial decisions, the annual program and the zoning.
The reserve commission is composed by:

a) President;
b) Two experts indicated by the Environmental Ministry;
c) A delegate of the naturalistic association;
d) A delegate of the Environmental Ministry;
e) Two delegates of the coastal local administration;
f) A delegate of the Sardinia Region;
g) A delegate of the economic and productive categories nominated by the Commercial Room for each Province
h) A delegate of the local director of education
i) A delegate of the environmental and cultural administration;
j) The Captain of the Harbour.

8.1.3. Participants in other committees or bodies

Such as a scientific committee, or a body of representatives from the local stakeholders, the public, the professional and non-governmental sectors, as in Sections B4-b and B4-c in Annex I.

- Scientific committee
- Diving Centre association
- Bathing operators consortium

a) Effectiveness of the co-ordination, where existing:

Satisfactory

b) Quality of involvement by the public, local communities, economic sectors, scientific community:

Satisfactory

**8.2. MANAGEMENT PLAN** (as set out in D7 of Annex I)

8.2.1. Management Plan

State if there is a management plan (MP) and in this case include the document as an annex. In the absence of a MP, mention if the main provisions governing the area and the main regulations for its protection are already in place and how (D7 in Annex I) and if the area will have a detailed management plan within three years (D7 in Annex I).

The Management Plant has been approved (21.12.2006) and it considers the ASPIM protocol (see also 7.4.4)

8.2.2. Formulation and approval of the Management Plan

Mention how the MP was formulated, e.g. by an expert team and/or under consultation and/or participation with other institutions or stakeholders. State the legal status of the MP, whether it is officialized, and how, and if it is binding for other institutions and sectors involved in the 60 area.

The M.P. has been formulated taking into account the guide line proposed by the Environmental Ministry, the Sardinia Region referring to the Habitat Directive 92/43 CEE and to the Bird Directive 79/409 CEE.
The M.P. is composed by the biological, geological, ecological, and socio – economical frames.
The analysis includes the ecological needs of habitats and species together with the clarification of the general management objectives
The M.P. represent the guide line for the activities of management also for the public and private authorities involved.

8.2.3. Contents and application of the Management Plan
State the degree of detail in the MP by entering YES or NO in the following list of potential contents, and assess the degree of implementation of the MP by using the 0-1-2-3 score on the right hand side:

| | Existing in MP | Degree of application |
|---|---|---|
| Detailed management objectives | YES | 3 |
| Zoning | YES | 3 |
| Regulations for each zone | YES | 3 |
| Governing body(ies) | YES | 3 |
| Management programmes as: | | |
| Administration | YES | |
| Protection | YES | 3 |
| Natural resource management | YES | 3 |
| | | 2 |
| Tourism and Visitation | YES | |
| Education and Training | YES | 3 |
| Research and Monitoring | YES | 3 |
| Services and Concessions | YES | 3 |
| Fund raising activities | YES | 3 |
| Periodic revisions of the MP | YES | 0 |
| | | 2 |

**8.3. PROTECTION MEASURES**

By Art. 6 of the Protocol the Parties agree to take all the necessary protection measures required for the conservation of the area, particularly the strengthening the application of the other Protocols to the Convention, and through the regulation of any other activity likely to harm the natural or cultural value of the area, such as economic, recreation or research activities. As per Section D2 in Annex I, the protection measures must be adequate to the site objectives in the short and long term, and take in particular into account the threats upon it.

8.3.1. Boundaries and signing
Briefly, state if the boundaries of the area and its zones are adequately marked in the field, both on land, in the sea, and at the principal points of access.

The informative MPA advertise posters and directional signals are present along all the MPA coastal territory.

The no take zone is signalled by yellow buoys illuminated during the night.

8.3.2. Institutional Collaboration

Name the different national and local institutions or organisations with legal responsibilities or involved in the protection and surveillance of land and sea zones, and any measures or mechanisms through which their co-ordination is pursued.

The Harbour Office (Coast Guard) is involved in the surveillance. The management body cooperate also with Revenue Guard Corps and Forestall Corps.

8.3.3. Surveillance

Consider the adequacy of the existing protection means (human and material), and your present ability to survey land and sea uses and accesses

The surveillance service is present only during the summer period. The AMP is wide and the surveillance force should be enhanced.
The following MPA motorboats are used for the surveillance and rescue services: Mako 6.50 m, rubber boat 7.50m, Sciallino 10 m.

8.3.4. Enforcement

Briefly, consider the adequacy of existing penalties and powers for effective enforcement of regulations, whether the existing sanctions can be considered sufficient to dissuade infractions, and if the field staff is empowered to impose sanctions.

The existing penalties are adeguate to dissuade infractions.
The problem related to the surveillance is the impossibility of the MPA operators to sanction

# 9. AVAILABLE RESOURCES

## 9.1. HUMAN RESOURCES (Art. 7.2.f in the Protocol)

9.1.1. Available staff

Assess the adequacy of the human resources available to the management body, in number of employees and training level, both in central headquarters and in the field. Indicate if there are staff training programmes.

1. Dr. Augusto Navone – Director – full time

2. Dr. Pieraugusto Panzalis – Environmental office – full time

3. Dr. Franceso Piras – Administrative office - full time (local administration of Loiri Porto San Paolo)

4. Dr.ssa Ilaria Ruiu – Communication office - full time

5. Sig. Salvatore Vitale – full time

6. Sig.ra Graziella Dedola – Public relations office – full time

7. Rag. Nicola Saba – Financial services– part-time (Olbia)

8. Rag. Antonietta Niccoli – accountant – part-time (local administration of Olbia)

9. Dr.ssa Cardia Paola – Administrative office – part-time (local administration of Olbia)

10. Geom. Eugenio Lecca – Technical office – part-time (local administration of S.Teodoro)

11. Dr.ssa Bruna Fontana – Technical office – part-time (local administration of S.Teodoro)

12. Sig. Gian Franco Roglia – Administrative office – part-time (local administration of Olbia)

13. Geom. Marisa Pala – Technical office – full time

14. Sig. Stanislao Ledda – Administrative office – part-time

Periodical training program are actuated

9.1.2. Permanent field staff

Answer YES or NO on the current existence of the following FIELD staff categories. If YES, enter the number of staff either permanent or part-time in that category, and evaluate on a 0-1-2-3 score (0 is low, 3 is high) the adequacy of their training level.

| | YES/NO | NUMBER Permanent/Part-time | ADEQUACY OF TRAINING LEVEL |
|---|---|---|---|
| Field Administrator | YES | 10 | 3 |
| Field Experts (scientific monitoring) | YES | 4 | 3 |
| Field Technicians (maintenance, etc) | YES | 1 | 3 |
| Wardens | NO | | 0 1 2 3 |
| Of which marine | YES | 1 | 3 |
| wardens | YES | 6 | 3 |
| Guides | | 1 | 3 |
| Other | | | |

9.1.3. Additional Support

Briefly, describe if the area currently has the advantage of other external human resources in support of its objectives, either from other national or local institutions, volunteer programmes, non-governmental organisations, academic or international organisations. Mention if there are any significant changes in prospect for the near future.

The MPA is supported by the help of the volunteers of the Marine Mammals Research Centre. Further the MPA collaborates with the Universities of Cagliari, Sassari and Genoa for the scientific activities.

## 9.2. FINANCIAL RESOURCES AND EQUIPMENT

By Art. 7 in the Protocol, the Parties agree to adopt measures or mechanisms to ensure the financing of the specially protected areas (Art.7.2.d), and the development of an appropriate infrastructure (Art.7.2.f). The General Principles para. ”e” in the Annex I call upon the Parties to provide the areas with adequate management means.

9.2.1. Present financial means

Note if the basic financing is ensured: a core funding for basic staff, protection and information measures. Who provides this core funding? Briefly assess the degree of adequacy of the present financial means for the area, either low, moderate, satisfactory; e.g. the implementation of the management plan, including protection, information, education, training and research.

The MPA is annually financed by the Environmental Ministry and by the local administrations involved in the Management Body.
The financial budget is divided in three chapters: ordinary administration, intervention and investment.
The interventions and the investments are based on project defined *a priori* valuated yearly by the Environmental Ministry
The Management Body provides to cover the staff’s cost
The financial means are low especially those addressed to the staff, this situation penalise the MPA management.

9.2.2. Expected or additional financial sources

Briefly describe any alternative sources of funding in use or planned, and the perspectives for long-term funding from national or other sources.

The main alternative financing sources are European grants and Italian Ministry grants.
Actually the amounts allocated by these institutions amount to 3 Million Euro.
At the moment do no exist any long-term fundings from national or other sources.

9.2.3. Basic infrastructure and equipment
Answer YES or NO to the following questions, and if YES, assess with a score of 1-2-3 (1 is low, 3 is high) the adequacy of the basic infrastructure and equipment.

| | YES/NO | ADEQUACY |
|---|---|---|
| Office and/or laboratory in the field | YES | 2 |
| Signs on the main accesses | YES | 3 |
| Guard posts on the main accesses | NO | 0 1 2 3 |
| Visitors information centre | YES | 3 |
| Self guided trails with signs | YES | 2 |
| Terrestrial vehicles | YES | 3 |
| Marine vehicles | YES | 3 |
| Radio and communications | YES | 3 |
| Environmental awareness materials | YES | 3 |
| Capacity to respond to emergencies | YES | 2 |
| Comment on basic infrastructure and equipment<br>At the moment the MPA offices are in a rented building. The definitive MPA offices are in restoration. | | |

## 9.3. INFORMATION AND KNOWLEDGE

By Section D3 of Annex I, the Parties agree that the planning, protection and management of a SPAMI must be based on an adequate knowledge of the elements of the natural environment and of socio-economic and cultural factors that characterize each area. In case of shortcomings in basic knowledge, an area proposed for inclusion in the SPAMI List must have a programme for the collection on the unavailable data and information.

9.3.1. State of knowledge

a) Assess the general state of knowledge of the area.
stimare lo stato di conoscenza dell'area

| | | | |
|---|---|---|---|
| | | | **3** |

b) Briefly describe the extent of knowledge of the area, considering at least specific maps, main ecological processes, habitat distribution, inventories of species and socio-economic factors, such as artisan fishing.

In the ’60 and ’70 the scientific interested was focused mainly on the terrestrial environment. The bird fauna has been deeply studied by Schenk during the ‘80.
Same studies related to marine environment have been conducted between the ’60 and ’80.
Despite this the wide data regarding Tavolara MPA marine environment have been collected by ENEA during the feasibility research program realised prior the institution of the MPA.
As a result of this study different maps of the area have been produced, such as geomorphology of the sea bottoms, biocenoses of the sea bottoms, historic-architectonic and naturalistic emergencies, soil use and environmental detractors, emergencies values on multi-criteria hierarchical base.

Since then the scientific activities in the MPA are increasing. During the Afrodite project the protection effect on benthos and fish fauna has been evaluated with positive results.
The particular geology of Tavolara MPA has induced to study the effect of the biomineralogy on the benthos assemblages distribution.
Mapping programs have been focused on invasive species, such as *Caulerpa taxifolia*, and on marine plants, in particular *Posidonia oceanica*

9.3.2. Data collection
Describe and assess the adequacy of any programme and activities to collect data in the area.

Environmental program: “Ecoporto” focused on the management of liquid wastes produced by the boat in the harbour included in the MPA.

Environmental restoration: “Ecocoste” focused on the environmental and engineering restoration of the littoral threatened by the erosion.

Environmental program: “Ecomotori” focused on the recycle of the old two time engine with the four times ones.

Monitoring programmes:

- Detection of diving site of high naturalistic interest and diving activity monitoring program
- Conservation and monitoring of *Podarcis tiliguerta ranzii*
- Characterisation and monitoring of marine sea birds
- Monitoring of *Paracentrotu lividus* populations
- Monitoring of the fishery

9.3.3. Monitoring programme

Section D8 in Annex I states that to be included in the SPAMI List, an area will have to be endowed with a monitoring programme having a certain number of significant parameters, in order to allow the assessment of the state and trends of the area, as well as the effectiveness and protection and management measures, so that they may be adapted if need be (indicators may, for instance, supply information about species status, condition of the ecosystem, land-use changes, extraction of natural resources -sand, water, game, fish-, visiting, adherence to the provisions of the management plan, etc.).

| | |
|---|---|
| a) Is there a monitoring programme? | YES |
| b) If NO, are there plans to start one, and when? | |
| c) If YES, assess as low, medium, satisfactory, its adequacy and present level of development. | satisfactory |

d) If YES, who is/are carrying out the monitoring programme?

The MPA staff and the scientific committee

e) If YES, briefly describe how the monitoring programme will be used in reviewing the management plan.

The results of the monitoring programmes will be used to asses the objectives of the M.P.

## 10. Other information, if any

## 11. CONTACT ADDRESSES (name(s), position(s) and contact address(es) of the person(s) in charge with the proposal and that compiled the report)

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07026 Olbia
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fax: 0789/204514
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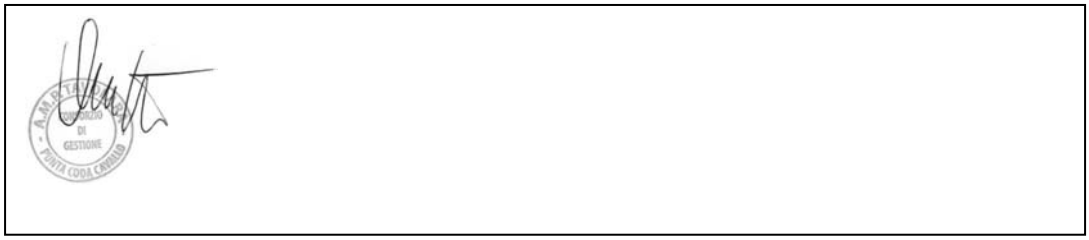
## 12. SIGNATURE(S) ON BEHALF OF THE STATE(S) PARTY/PARTIES MAKING THE PROPOSAL



## 13. DATE

## ANNEX III

REVISED DRAFT STANDARD DATA-ENTRY FORM (SDF) FOR NATIONAL INVENTORIES OF NATURAL SITES OF CONSERVATION INTEREST

**TAVOLARA-PUNTA CODA CAVALLO**

## 1. SITE IDENTIFICATION

### 1.1. SITE CODE

| I | T | S | A | 0 | 5 | T | V | L |
|---|---|---|---|---|---|---|---|---|

### 1.2. IDENTIFICATION DATE

| 1 | 9 | 9 | 7 | 1 | 2 |
|---|---|---|---|---|---|
| Y | Y | Y | Y | M | M |

### 1.3. COMPILATION DATE

| 2 | 0 | 0 | 6 | 0 | 5 |
|---|---|---|---|---|---|
| Y | Y | Y | Y | M | M |

### 1.4. UPDATE

| | | | | | |
|---|---|---|---|---|---|
| Y | Y | Y | Y | M | M |

### 1.5. RESPONDENT(S):

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fax: 0789/204514
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### 1.6. SITE NAME:

Marine Protected Area Tavolara - Punta Coda Cavallo

# 2.SITE LOCATION

## 2.1. SITE CENTRE LOCATION:

| LONGITUDE | | | LATITUDE | | |
|---|---|---|---|---|---|
| E 09 | 41 | 41 | 40 | 53 | 43 |

W/E (Greenwich)

## 2.2. SITE SURFACE AREA (ha):

| | |
|---|---|
| Terrestrial area: | |
| Marine area: | 150911.00 |
| **TOTAL AREA:** | 150911.00 |

## 2.3. SITE LENGTH(Km):

76094

## 2.4. ALTITUDE/DEPTH (m):

| | +/- MINIMUM | MAXIMUM | MEAN |
|---|---|---|---|
| Altitude: | 0 | +4 | +2 |
| Depth: | 0 | -85 | -40 |

## 2.5. ADMINISTRATIVE REGION:

| CODE | REGION NAME | %COVER |
|---|---|---|
| | Regione Sardinia | 100 |
| | | |
| | Marine area not covered by a NUTS-region | 100 |

# 3. ECOLOGICAL INFORMATION

## 3.1. GENERAL SITE CHARACTER:

| | % cover |
|---|---|
| COASTAL AREAS | |
| Coastal wetlands (lagoons, estuaries, deltas, salt works) | 1 |
| Salt marshes | |
| Coastal sand dunes, Sand beaches, Shingle beaches | |
| Sea cliffs and Rocky shores | |
| Mud flats and Sand flats | |
| Scrub, Maquis and Garrigue, Phrygana | |
| Forests | |
| Agricultural land | |
| Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites) | |
| MARINE AREAS | |
| Hard beds | |
| Rocks | 5 |
| Muds | |
| Sands | |
| Gravels | |
| Stones and pebbles | |
| Seagrass meadows | 31 |
| Caves | 1 |
| Other Sea bottom areas (SEA INLETS) | 67 |
| Other site characteristics: | |

3.2. HABITAT types present on the site and their assessment :

**3.2.a. MARINE HABITAT TYPES AS FROM THE REFERENCE LIST OF MARINE AND COASTAL HABITAT TYPES FOR THE SELECTION OF SITES TO BE INCLUDED IN THE NATIONAL INVENTORIES OF NATURAL SITES OF CONSERVATION INTEREST:**

| CODE | | | | %COVER | REPRESENTATIVITY | RELATIVE SURFACE | CONSERVATION STATUS | VULNERABILITY |
|---|---|---|---|---|---|---|---|---|
| I | 2 | 1 | | 3 0 | B | C | A | A B C |
| I | 2 | 1 | 5 | | B | C | A | A B C |
| II | 1 | 1 | | | B | C | A | A B C |
| II | 1 | 1 | 1 | | B | C | A | A B C |
| II | 3 | 1 | 1 | | B | C | A | A B C |
| II | 4 | 1 | | | B | C | A | A B C |
| II | 4 | 1 | 3 | | B | C | A | A B C |
| II | 4 | 2 | 1 | | B | C | A | A B C |
| II | 4 | 2 | 10 | | B | C | A | A B C |
| II | 4 | 3 | | | B | C | A | A B C |
| II | 4 | 3 | 1 | | B | C | A | A B C |
| III | 2 | 3 | 3 | | B | C | A | A B C |
| III | 3 | 2 | | | B | C | A | A B C |
| III | 3 | 2 | 1 | | B | C | A | A B C |
| III | 3 | 2 | 2 | | B | C | A | A B C |
| III | 5 | 1 | | | | C | A | B |
| III | 5 | 1 | 1 | | B | C | A | A B C |
| III | 5 | 1 | 2 | | B | C | A | A B C |
| III | 6 | 1 | 2 | | B | C | A | A B C |
| III | 6 | 1 | 3 | | B | C | A | A B C |
| III | 6 | 1 | 14 | | B | C | A | A B C |
| III | 6 | 1 | 15 | | B | C | A | A B C |
| III | 6 | 1 | 16 | | B | C | A | A B C |
| III | 6 | 1 | 20 | | B | C | A | A B C |
| III | 6 | 1 | 25 | | B | C | A | A B C |
| IV | 2 | 2 | 10 | | B | C | A | A B C |
| IV | 3 | 1 | | | B | C | A | A B C |
| IV | 3 | 1 | 1 | | B | C | A | A B C |
| IV | 3 | 1 | 5 | | B | C | A | A B C |
| IV | 3 | 1 | 10 | | B | C | A | A B C |
| IV | 3 | 1 | 11 | | B | C | A | A B C |
| IV | 3 | 1 | 13 | | | C | A | A B C |
| IV | 3 | 2 | | | B | C | A | A B C |

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**3.2.b. COASTAL AND WETLAND HABITAT TYPES AS FROM THE REFERENCE LIST OF MARINE AND COASTAL HABITAT TYPES FOR THE SELECTION OF SITES TO BE INCLUDED IN THE NATIONAL INVENTORIES OF NATURAL SITES OF CONSERVATION INTEREST:**

| CODE | | | | | | | %COVER | | REPRESENTATIVITY | | | | RELATIVE SURFACE | | | CONSERVATION STATUS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| III | 2 | 2 | 5 | | | | 1 | 5 | A | | | | | | C | A | | |
| III | 2 | 1 | 3 | | | | 1 | 0 | A | | | | | | C | A | | |
| I | 1 | 4 | 2 | | | | 0 | 5 | A | | | | | | C | A | | |
| I | 4 | 1 | | | | | 0 | 5 | A | | | | | | C | A | | |
| III | 3 | 1 | | | | | 0 | 2 | | | C | | | | C | A | | |
| III | 2 | 4 | 1 | 1 | | | 0 | 2 | | B | | | | | C | A | | |
| VI | 2 | | | | | | 0 | 1 | A | | | | | | C | A | | |
| I | 2 | 2 | 2 | 1 | 2 | | 0 | 1 | | | | D | | | | | | |
| I | 2 | 2 | 2 | 4 | 1 | | 0 | 1 | | | | D | | | | | | |
| I | 1 | 1 | | | | | 0 | 1 | | | C | | | | C | | B | |

*Please copy page if necessary*

**3.2.c. SURFACES COVERED BY OTHER HABITAT TYPES:**

| CODE | | | | | | | | | %COVER | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | . | | | | | | | | | |
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| | | . | | | | | | | | | |

## 3.3. SPECIES

covered by the Reference List of Species for the selection of sites to be included in the national inventories of natural sites of conservation interest and their assessment:

## 3.3.a. MARINE FAUNA SPECIES included in the reference list of species::

| CODE | NAME | POPULATION | | | | | | | | SITE ASSESSMENT | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RESIDENT | | MIGRATORY | | | | | | Population | | | | Conservation | | | | Endemism | | | Role of site | | |
| | | Breeding | Non breed | Breeding | Wintering | Staging | | | | | | | | | | | | | | | | | |
| 3 | 0 | 1 | 8 | ***Aplysina sp. plur.*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 2 | 5 | 6 | 5 | ***Axinella polypoides*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 3 | 0 | 3 | 2 | ***Hippospongia communis*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 3 | 0 | 0 | 4 | ***Sarcotragus spinosulus*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 3 | 0 | 0 | 5 | ***Sarcotragus pipetta*** | | **R** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 3 | 0 | 0 | 6 | ***Spongia agaricina*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 3 | 0 | 0 | 7 | ***Spongia officinalis*** | | **R** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 3 | 0 | 0 | 9 | ***Tethya sp. plur.*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 1 | 0 | 0 | 1 | ***Corallium rubrum*** | | **R** | | | | | | | | **D** | | | | | | | | | |
| 2 | 5 | 6 | 2 | ***Gerardia savaglia*** | | **R** | | | | | | | | **D** | | | | | | | | | |
| 2 | 5 | 8 | 7 | ***Asterina pancerii*** | | **C** | | | | | | | | **D** | | | | | | | | | |
| 1 | 0 | 0 | 8 | ***Centrostephanus longispinus*** | | **R** | | | | | | | | **D** | | | | | | | | | |
| 2 | 5 | 8 | 8 | ***Ophiodiaster ophidianus*** | | **C** | | | | | | | | **D** | | | | | | | | | |
| 3 | 0 | 1 | 1 | ***Paracentrotus lividus*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 2 | 5 | 7 | 0 | ***Dendropoma petraeum*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 1 | 0 | 2 | 7 | ***Lithophaga lithophaga*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 2 | 5 | 7 | 2 | ***Luria lurida (= Cypraea lurida)*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 2 | 5 | 7 | 3 | ***Mitra zonata*** | | **R** | | | | | | | **C** | | | | | | | | | | |
| 1 | 0 | 1 | 2 | ***Patella ferruginea*** | | **R** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 2 | 5 | 8 | 1 | ***Pholas dactylus*** | | **C** | | | | | | | **C** | | | | | | | | | | |
| 1 | 0 | 2 | 8 | ***Pinna nobilis*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 3 | 0 | 1 | 3 | ***Homarus gammarus*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |
| 3 | 0 | 1 | 4 | ***Maja squinado*** | | **C** | | | | | | | **C** | | **A** | | | **Y** | | | | **B** | |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 0 | 1 | 5 | Palinurus elephas | | C | | | | | | | C | | A | | | Y | | | B | |
| 1 | 0 | 9 | 0 | Scyllarides latus | | R | | | | | | | C | | A | | | Y | | | B | |
| 3 | 0 | 1 | 6 | Scyllarus pigmaeus | | C | | | | | | | C | | A | | | Y | | | B | |
| 3 | 0 | 1 | 7 | Scyllarus arctus | | C | | | | | | | C | | A | | | Y | | | B | |
| 1 | 1 | 0 | 3 | Alosa fallax | | R | | | | | | | | D | | | | | | | | |
| 3 | 0 | 1 | 9 | Anguilla anguilla | | C | | | | | | | | D | | | | | | | | |
| 3 | 0 | 2 | 0 | Cetorhinus maximus | | R | | | | | | | | D | | | | | | | | |
| 3 | 0 | 2 | 1 | Epinephelus marginatus | | C | | | | | | | C | | | B | | Y | | | B | |
| 2 | 5 | 3 | 9 | Hippocampus guttulatus | | R | | | | | | | | D | | | | | | | | |
| 2 | 5 | 3 | 8 | Hippocampus hippocampus | | R | | | | | | | | D | | | | | | | | |
| 3 | 0 | 2 | 4 | Mobula mobular | | | V | | | | | | | D | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 0 | 2 | 5 | ***Prionace glauca*** | | **R** | | | | | | | | **D** | | | | | | | | | | |
| 3 | 0 | 2 | 7 | ***Sciaena umbra*** | | **C** | | | | | | | **C** | | | **B** | | **Y** | | | **B** | |
| 3 | 0 | 2 | 8 | ***Squatina squatina*** | | **R** | | | | | | | | **D** | | | | | | | **B** | |
| 3 | 0 | 2 | 9 | ***Thunnus thynnus*** | | | **R** | | | | | | **C** | | | **B** | | **Y** | | | **B** | |
| 3 | 0 | 3 | 0 | ***Umbrina cirrosa*** | | **C** | | | | | | | | **D** | | | | | | | **B** | |
| 3 | 0 | 3 | 1 | ***Xiphias gladius*** | | | **R** | | | | | | | **D** | | | | | | | | |
| 1 | 2 | 2 | 4 | ***Caretta caretta*** | | | **V** | | | | | | | **D** | | | | | | | | |
| 12 | 2 | 2 | 5 | ***Eretmochelys imbricata*** | | | **V** | | | | | | | **D** | | | | | | | | |
| 2 | 6 | 2 | 1 | ***Balaenoptera physalus*** | | | **R** | | | | | | | **D** | | | | | | | | |
| 1 | 3 | 5 | 0 | ***Delphinus delphis*** | | | **R** | | | | | | | **D** | | | | | | | | |
| 2 | 6 | 2 | 4 | ***Physeter catodon*** | | | **R** | | | | | | | **D** | | | | | | | | |
| 2 | 0 | 344 | 4 | ***Stenella coeruleoalba*** | | | **R** | | | | | | **C** | | | **B** | | **Y** | | **A** | | |
| 1 | 3 | 4 | 9 | ***Tursiops truncates*** | | | **C** | | | | | **B** | | | | **B** | | **Y** | | **A** | | |
| 1 | 3 | 6 | 6 | ***Monachus monachus*** | | | **V** | | | | | | | **D** | | | | | | | | |

### 3.3.b. MARINE FLORA SPECIES included in the reference list of species:

| CODE | | | | NAME | | POPULATION | SITE ASSESSMENT | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Population | Conservation | Endemism | Isolation |
| 2 | 2 | 7 | 6 | ***Posidonia oceanica*** | | | **C** | **B** | **Y** | **C** |
| 3 | 0 | 0 | 1 | ***Nanozostera noltii*** | | | **C** | **B** | **N** | **C** |
| 2 | 0 | 4 | 3 | ***Cystoseira amentacea var. stricta*** | | | **C** | **B** | **Y** | **C** |
| 2 | 0 | 4 | 7 | ***Cystoseira zosteroides*** | | | **C** | **B** | **N** | **C** |
| 2 | 0 | 4 | 0 | ***Lithophyllum byssoides*** | | | **C** | **B** | **Y** | **C** |

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### 3.3.c. COASTAL FAUNA SPECIES included in the reference list of species:

| CODE | | | | NAME | POPULATION | | | | | SITE ASSESSMENT | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | RESIDENT | | MIGRATORY | | | Population | Conservation | Endemism | Isolation |
| | | | | | **Breeding** | **Non-breed** | **Breeding** | **Wintering** | **Staging** | | | | |
| A | 0 | 1 | 0 | ***Calonectris diomedea*** | | | **>500 p** | | | **C** | **B** | | |
| A | 1 | 8 | 1 | ***Larus audouinii*** | | | **<150 p** | | | **C** | **B** | | |
| A | 0 | 1 | 4 | ***Hydrobates pelagicus*** | | | **R** | | | **D** | | | |
| A | 0 | 1 | 8 | ***Phalacrocorax aristotelis*** | | | **<500 p** | | | **D** | **B** | | |
| A | 3 | 93 | 3 | ***Phalacrocorax pygmeus*** | | | **C** | | | **D** | **B** | | |
| A | 0 | 3 | 5 | ***Phoenicopterus ruber*** | | | **C** | | | **D** | **B** | | |
| A | 6 | 0 | 1 | ***Puffinus yelkouan*** | | | **<2000 p** | | | **D** | **B** | | |
| A | 1 | 9 | 5 | ***Sterna albifrons*** | | | | | **R** | **D** | | | |
| A | 0 | 9 | 4 | ***Pandion haliaetus*** | | | | | **R** | **D** | | | |
| A | 1 | 9 | 1 | ***Sterna sandvicensis*** | | | **<10 p** | | | **D** | | | |

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### 3.3.d. COASTAL FLORA SPECIES included in the reference list of species:

| CODE | NAME | POPULATION | SITE ASSESSMENT | | | |
|---|---|---|---|---|---|---|
| | | | Populatio | Conservati | Endemis | Isolatio |
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## 3.4. Other Important Species of Flora and Fauna:

| GROUP | | | | | | | SCIENTIFIC NAME | POPULATION | MOTIVATION | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | M | A | R | F | I | P | | | | | | |
| | | | | | | X | ***Alyssum tavolarae*** | C | | B | | |
| | | | | | | X | ***Arenaria balearica*** | C | | B | | |
| | | | | | | X | ***Aristolochia rotunda* spp. *insulari*** | C | | B | | |
| | | | | | | X | ***Asperula deficiens*** | C | | B | | |
| | | | | | | X | ***Bellium bellidioides*** | C | | B | | |
| | | | | | | X | ***Brassica insularis*** | C | | B | | |
| | | | | | | X | ***Bryonia mormorata*** | C | | B | | |
| | | | | | | X | ***Buphthalmum inuloides*** | C | | B | | |
| | | | | | | X | ***Campanula forsythii*** | C | | B | | |
| | | | | | | X | ***Centaurea filiformis* spp. *filiform*** | C | | B | | |
| | | | | | | X | ***Cephalaria mediterranea*** | C | | B | | |
| | | | | | | X | ***Dracunculus moscivoros*** | C | | | C | |
| | | | | | | X | ***Erodium corsicum*** | C | | B | | |
| | | | | | | X | ***Euphorbia cupanii*** | C | | B | | |
| | | | | | | X | ***Genista corsica*** | C | | B | | |
| | | | | | | X | ***Limonium articulatum*** | C | | | C | |
| | | | | | | X | ***Limonium hermaeum*** | C | | B | | |
| | | | | | | X | ***Limonium protohermaeum*** | C | | B | | |
| | | | | | | X | ***Orchis brancifortii*** | C | | B | | |
| | | | | | | X | ***Pancratium illyricum*** | C | | B | | |
| | | | | | | X | ***Ptilostemon casabonae*** | C | | | C | |
| | | | | | | X | ***Ptychotis sardoa*** | C | | B | | |
| | | | | | | X | ***Romulea requieni*** | C | | B | | |
| | | | | | | X | ***Sargassum vulgare*** | C | | | | D |
| | | | | | | X | ***Scrophularia ramosissima*** | C | | | | D |
| | | | | | | X | ***Scrophularia trifoliata*** | C | | B | | |
| | | | | | | X | ***Seseli bocconei* spp. *praecox*** | C | | B | | |
| | | | | | | X | ***Sesleria insularis* spp. *insularis*** | C | | B | | |
| | | | | | | X | ***Silene corsica*** | C | | B | | |
| | | | | | | X | *Silene nodulosa* | C | | B | | |
| | | | | | | X | *Soleirolia soleirolii* | C | | B | | |
| | | | | | | X | *Spergularia macrorhiza* | C | | B | | |
| | | | | | | X | *Stachys glutinosa* | C | | B | | |
| | | | | | | X | *Thesium italicum* | C | | B | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | X | | *Paramuricea clavata* | C | | | | D |
| | | | | | X | | *Paramuricea macrospina* | V | | | | D |
| | | | | | X | | *Eunicella cavolinii* | C | | | | D |
| | | | | | X | | *Tylodina perversa* | R | | | | D |
| | | | X | | | | *Podarcis tiliguerta ranzii* | V | | B | | |
| | | | | X | | | *Schedophilus ovalis* | R | | | | D |
| X | | | | | | | *Egretta garzetta* | C | | | | D |
| X | | | | | | | *Falco peregrinus* | D | | | | |
| X | | | | | | | *Hieraaetus fasciatus* | C | | | | D |
| X | | | | | | | *Larius collurio* | D | | | | |
| X | | | | | | | *Pandion haliaetus* | D | | | | |
| X | | | | | | | *Sylvia sarda* | D | | B | | |
| X | | | | | | | *Sylvia undata* | D | | | | |
| X | | | | | | | *Aquila chrysaetos* | D | | | | |
| X | | | | | | | *Sterna hirundo* | D | | | | |
| X | | | | | | | *Caprimulgus europaeus* | D | | | | |
| | X | | | | | | *Rhinolophus ferrum-equinum* | C | | | | D |
| | X | | | | | | *Miniopterus schreibersi* | C | | | | D |
| | | | X | | | | *Phyllodactylus europaeus* | C | | | | D |
| | | | X | | | | *Testudo marginata* | B | | | | D |
| | | | X | | | | *Testudo hermanni* | D | | | | |
| | | | X | | | | *Testudo graeca* | D | | | | |

(M = Mammals, B = Birds, R = Reptiles, A = Amphibians, F = Fishes, I = Invertebrates, P = Plants)

## 4. SITE DESCRIPTION

Tavolara-Punta Coda Cavallo Marine Protected Area is located in the North-Western part of Sardinia, named Gallura. Its coasts extends from Ceraso Cape, in the North, to Isuledda Point, in the South. Between these two points the morphology of the coast is irregularly articulated and hence presents different exposure degrees, such as high rocky promontories, alternated to wide sandy beaches and little granitic inlets.

The Islands Tavolara, Molara, Proratora, Reulino, Cana increase the landscape value of the marine environment while the terrestrial one is enhanced by the hind-dunes. These are characterized by pools and marshes of different extension adjacent to littoral sandy dunes representing very important wetlands points for migratory birds. In this contest San Teodoro is the most important salt water coastal marsh (240 ha) in Tavolara MPA.

The Mediterranean climate of the Sardinian region favors the rocky erosion processes. The results of the hydrolysis, hydration and oxidation processes are particularly relevant in the granitic areas of the Gallura.

The fracture processes together with the stream waters canals and the erosions have generated an huge variety of forms and structures in the granitic rocks resulting of particular natural suggestive effect.

The sandy detritus, originated by the degradation processes of granite composes the Gallura's grounds and its sands This alteration surface has been partially removed after the tectonics lifting movements and the past climate changes. These geological processes have allowed the outcrop of the below structures, still unaltered, creating particular granitic morphologies, such as *tors*, *inselberg* and *split*.

Tavolara Island is constituted by a Jurassic calcareous cover based on a Paleozoic granite basement.

Tavolara morphology is also enriched by the spectacular arch in Levante's Creek, product of the combined effects of waves, winds and Karstification.

The MPA submerged bottoms are mainly granitic, in part covered by *Posidonia oceanica* (L.) Delile. Erosion surfaces of homogeneous morphology and *inselberg* are presents at the depth at about 50 m.

The shallower bottoms are instead characterised by irregular active abrasions strongly fracturated. Instead the Molara Island's sea bottoms are mainly composed by *thor*.

Along the Tavolara submerged cliff, under the actual lower tidal limit is present a platform composed by coralline encrusting algae.

At about the depth of 20 – 25 m coralligeneous formations and overhangs ends in canals up to the abrasion platform characterized by biogenic sands and *ripple marks.*

Further important *beach rock* formations are presents at different depths (- 60m, - 40m, - 25m, - 5m e – 0.5m).

The MPA presents two different no - take zones naturally isolated: Tavolara Island and Molarotto.

### 4.1. QUALITY AND IMPORTANCE:

Tavolara MPA is a unique area for its geological aspects. The complexity and heterogeneity of the land is of fundamental importance for the development and conservation of particular marine and terrestrial communities.

In the MPA territories are present more than 30 endemic plants species.

Tavolara MPA is also an important breeding site for different birds such as Yelkouan Shearwater (*Puffinus yelkouan*) Cory's Shearwater (*Calonectris diomedea*), Shag (*Phalacrocorax aristotelis*), Audouin's Gull (*Larus adouinii*), Little Heron (*Egretta garzetta*).
Further are present some *Prolagus sardous* fossil deposits and different archeological sites (about 40), such as, the most famous, the Pope's Cave, where Neolithic graffito are presents.

The last monk seal (*Monachus monachus*) sighting goes back to 1992.

### 4.2. CONSERVATION STATUS:

The general status of conservation is good.

### 4.3. VULNERABILITY:

Some problems related to the summer tourist impact can be noted.
An intensive human presence, during the tourist season, on the sandy beaches could contribute to the natural erosion processes of the dunes.
While the anchoring could reduce the extension of the *Posidonia oceanica* meadows.

**4.4. SITE DESIGNATION (remarks concerning quantitative data below):**

| |
|---|
| |

**4.5. OWNERSHIP:**

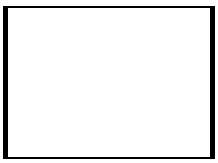
| |
|---|
| National Marine Protected Area. Established by decree of the Ministry of the Environment on 12.12.199, based upon laws n. 979/1982 and n. 394/1991. |

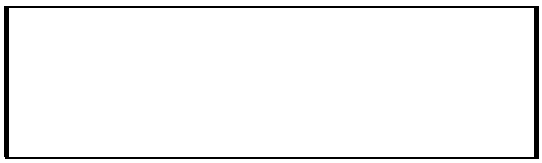
**4.6. DOCUMENTATION:**

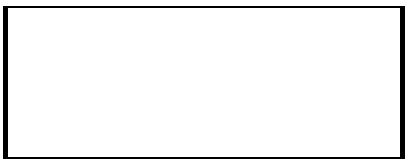
| |
|---|
| Update references are presents at the end of the present document. |

**4.7. HISTORY:**

| Date | Field Changed | Description |
|---|---|---|
| 2007 | All | Initial notification |
| | | |







# 5. SITE PROTECTION STATUS AND RELATION WITH OTHER SITES:

## 5.1. DESIGNATION TYPES at National and sub-national level:

| CODE | %COVER | CODE | %COVER | CODE | %COVER |
|---|---|---|---|---|---|
| I T 0 3 | 4 | | | | |
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| I T 2 6 | 7 6 | | | | |

## 5.2. RELATION OF THE DESCRIBED SITE WITH OTHER SITES:

**designated at National or sub-national level:**

| TYPE CODE | SITE NAME | OVERLAP TYPE | OVERLAP %COVER |
|---|---|---|---|
| | | | |

**designated at the International level:**

| TYPE | SITE CODE (if appropriate) | SITE NAME | OVERLAP TYPE | OVERLAP %COVER |
|---|---|---|---|---|
| World Heritage Site: | | | | |
| Biosphere Reserve: | | | | |
| Ramsar Convention: | | | | |
| Biogenetic Reserve: | | | | |
| Eurodiploma Site: | | | | |
| Barcelona Convention - SPA: | | | | |
| Barcelona Convention - SPAMI: | | | | |
| Natura2000-Special Protection Area | | | | |
| Natura2000-Special Area for Conservation: | ITB010010 | Tavolara, Molara e Molarotto Islands | | 2 0 |
| | ITB010011 | San Teodoro salt-marsh | | 4 |
| Bern Convention: Emerald site | | | | |
| | | | | |
| Other: | | | | |
| | | | | |

## 6. HUMAN ACTIVITIES IN AND AROUND THE SITE

### 6.1. IMPACTS / ACTIVITIES AND PROPORTION OF THE SURFACE AREA OF THE SITE AFFECTED:

**IMPACTS AND ACTIVITIES WITHIN THE SITE:**

| CODE | INTENSITY | % OF SITE | INFLUENCE | CODE | INTENSITY | % OF SITE | INFLUENCE |
|---|---|---|---|---|---|---|---|
| 200 | A | | - | 900 | B | | - |
| 210 | A | | - | 948 | B | | - |
| 240 | A | | - | | A B C | | - |
| 402 | A | | - | | A B C | | - |
| 421 | C | | - | | A B C | | - |
| 621 | A | | - | | A B C | | - |

**IMPACTS AND ACTIVITIES AROUND THE SITE:**

| CODE | INTENSITY | % OF SITE | INFLUENCE | CODE | INTENSITY | % OF SITE | INFLUENCE |
|---|---|---|---|---|---|---|---|
| 200 | A | | - | 621 | A | | - |
| 210 | A | | - | 900 | B | | - |
| 240 | A | | - | 948 | B | | - |
| 402 | A | | - | | A B C | | - |
| 421 | C | | - | | A B C | | - |
| 520 | A | | - | | A B C | | - |

### 6.2. SITE MANAGEMENT:

BODY(IES) RESPONSIBLE FOR THE SITE MANAGEMENT AND OTHER INSTITUTIONS INVOLVED:

The Management Body is composed of an association of three local administration: Olbia, Loiri – Porto S. Paolo and S. Teodoro.

The Harbour Office (Coast Guard) is involved in the surveillance. The Management Body cooperate also with Revenue Guard Corps and Forestall Corps.

SITE MANAGEMENT AND PLANS:

A Zone: no take zone. This area includes two site one in Tavolara and the other one in Molarotto Island. In Tavolara Island the boundaries of the no take zone are: the Southern point of Levante's Creek, the Pope's Point, the South-Est side of Passo Malo Point. Molarotto Island no take zone corresponds to the pentagonal area around the Island.
In no take zone are allowed the scientific research activities and SCUBA diving (along fixed way) asking previously the permission to the Management Body.
B Zone: general reserve. In this area are allowed sailing up to the limit of 10 kn, regulated SCUBA diving activities, bathing and mooring in special structure created by the Management Body. Not destructive selective fishing is allowed to the fisherman that live in the municipal boundaries of the MPA, the fish total amount is decided from the MPA Management. Trawl-net and not professional fish are not admitted.
C Zone: partial reserve. In this area are allowed sailing, regulated mooring, SCUBA diving, not destructive selective fishing to the fisherman that live in the municipal boundaries of the MPA, recreational fishing line.

## 7. MAP OF THE SITE

- **Physical map:**

| NATIONAL MAP NUMBER | SCALE | PROJECTION |
|---|---|---|
| I.I.M. n. 42-43 | 1:100.000 | Mercator |

REFERENCE TO AVAILABILITY OF BOUNDARIES IN DIGITISED FORM

| |
|---|
| It is available a GIS System. |

- **Map of designated sites described in 5:**

Please indicate this information on a map with the same characteristics as above !

- **Aerial photograph(s) included:**

[X] YES [ ] NO

| NUMBER DATE | AREA | SUBJECT | | COPYRIGHT |
|---|---|---|---|---|
| | | | | |
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| | | | | |
| | | | | |

## 8. SLIDES

| NUMBER DATE | PLACE | SUBJECT | COPYRIGHT |
|---|---|---|---|
| | | | |


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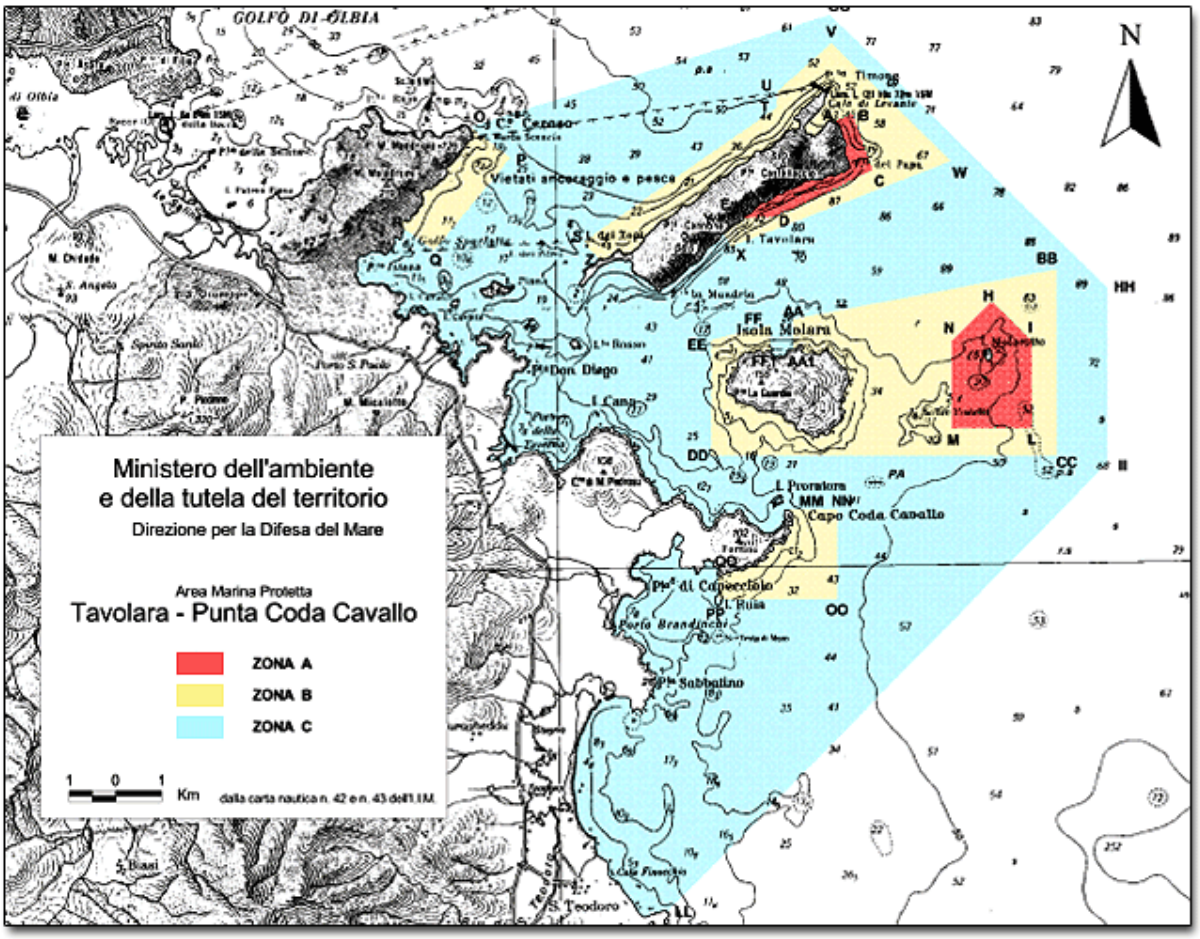


**Figura 1 I.I.M. n. 42-43**

TAVOLARA

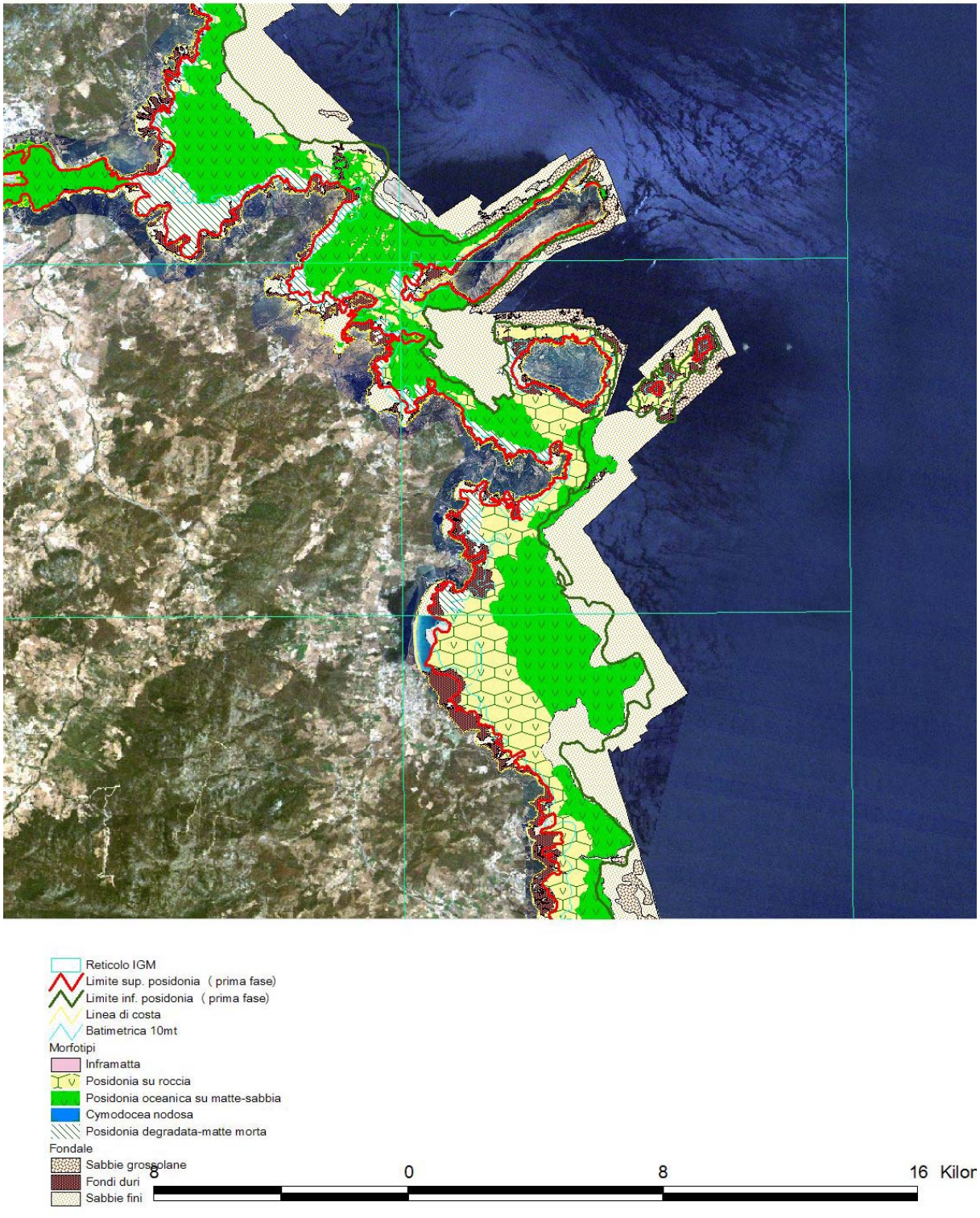


**Figura 2**